CITIZENS

Pittsfield, MA 01201

May 8, 2009

Mr. Jim Murphy
EPA Community Involvement Coordinator
c/o Weston Solutions
10 Lyman St.
Pittsfield, MA 01201

RE: GE's Response to EPA's Comments on the Corrective Measures Study for the Rest of the River

I am writing to comment on General Electric's recent Response to EPA's Interim Comments on the CMS report.

Of great concern is the fact that GE still has not stated where it intends to build an upland disposal facility, i.e., a toxic waste dump. GE states that "to date, [it] has not completed its evaluation of such potential locations". GE expects the EPA to approve its plan for establishment of the upland storage facility before it will disclose its location. Any GE proposal which calls for digging and dumping toxic sediment should be rejected outright until GE specifically discloses where it intends to dispose of the toxic sediment.

The consent decree has allowed establishment of a number of large toxic waste dumps in Pittsfield (Hill 78 next to Allendale School, the toxic waste dump next to the Sabic parking lot and Unkament Brook, and Silver Lake) the EPA should insist that no other toxic dumps (upland storage facilities) be allowed in Pittsfield or anywhere in Berkshire County. Pittsfield has already been overburdened by the consent decree's failure to address clean up of these dumps.

Moreover, EPA should be wary of GE's cynical assertion that it is "developing an ecologically sensitive alternative" to the clean up process. Any company that could willingly establish a toxic waste dump next to an elementary school (Hill 78) does not have the community health in mind. Likewise, the assertion that it wants to protect the environmentally sensitive areas like Canoe Meadows by digging up the area, using rip rap, and dumping high level waste in upland storage facilities is laughable.

Please insist that GE be required to pay for innovative clean up measures that will not create more toxic landfills and please require them to restore the beautiful habitat that their pollution destroyed.

Sincerely,

Valerie A. Andersen

Mr. Jim Murphy

US Environmental Protection Agency

New England Region 1

Office of the Regional Administrator

1 Congress St., Suite 1100 (RAA)

Boston, MA 02114-2023

Dear Sir,

I am writing you with regard to the proposal by General Electric to clean up the PCB's in the Housatonic River.

First off, I am not a member of any environmental watchdog group, like the HRI. I am just a concerned citizen who wants to see the RIGHT thing done!

I have watched with amusement and outrage the way GE has tried to wrangle itself from any responsibility for cleaning up the real and potential damage its tenure in Pittsfield has caused. This has been ongoing since the late 70's when it was announced that PCB's are dangerous to humans. I feel that GE's only concern is to its shareholders, and to minimize the financial burden a cleanup would pose to GE. For them to make a public announcement that their solution to cleaning up the lower river is " dredging and covering with 6" of sand" is preposterous, yet this type of statement is in keeping with GE's company line in regard to this clean up. Throw in the statement that the spoils would be land filled near the river, and it becomes very obvious what the intention of GE as a corporation is; Make the fix look worse than the problem!

I am an avid sportsman who uses the river, specifically fishing and canoeing. Mr. Murphy, if you haven't taken a canoe ride from New Lenox to Woods Pond, then you have missed one of the most beautiful environments in our entire state! What a lovely and diverse habitat this area is! In my humble opinion, all points south on the river are a close second in terms of beauty! Why just yesterday while ice fishing on Woods Pond, I had the thrill of watching a swan ply the open water. It is not uncommon to see a pair of nesting Bald Eagles circling above. Words can't describe the thrill of watching an Osprey circling over the shallows at 200 feet up, and go into a head-first dive to grab its dinner! The fishing in the entire river is fantastic. Trophy bass are very common in the 5 – 7 lb range. And fishermen drive from Boston just to try to catch one of the Northern Pike that abound in these waters, some as much as 20+ lbs!

And yet, there is a silent eeriness that lies buried within this beauty. PCBs. The legacy of GE in Pittsfield! I am not a scientist; I do not keep up to date on all the new technologies that are out there. But there HAS to be a better way to rid this lovely resource of the poison that lurks within. To even suggest that doing nothing is an option, well that is not an option. To dredge the river like was done in downtown Pittsfield; this is a completely different circumstance. To bulldoze the lower section above Woods Pond, and make a sterile waterway, is not an option. We would forever lose the ecological diversity I touched upon. To cover the sediment with 6 inches of sand? That would last till the first spring thaw. Not to mention the thousands of life forms that burrow into that sand, only to bring the PCB laden sediment back to the top. I've seen the mud a 20 to 30 lb carp turns up as it swims in the shallows. To propose a landfill for the dredging somewhere near the

river? That is ludicrous! All of these proposals by GE have an overriding benefit for the company; they are relatively inexpensive. And that is GE's goal in this entire process, to minimize financial burden to GE and its shareholders.

Here's my bottom line, Sir. The Housatonic River needs to be rid of ALL PCB contamination! From downtown Pittsfield to the Long Island Sound! That means removal of the contamination, not covering it up, or piling in our back yards! The removal has to occur in a manner that maintains the ecological and biological footprint of the river as it is right now. There has to be a minimum of any detrimental effect on the wildlife that lives in the river. The resulting river needs to still hold all of these life forms within, without the PCB danger. There has to be technology out there that will satisfy these conditions. It is certainly worthy of exploring any options. So please, I ask you to make restoring the Housatonic River to a clean and healthy habitat the primary goal of the EPA. Please do not let politics or corporate greed enter into the decision making process. This should be fairly cut-and-dried. Clean the Housatonic, Save the Housatonic! Thank you so much for your caring and your time!

Thomas E Hoffman

Washington, MA 01223

March 21, 2009

Dear Sir,

This is in regards to the PCB cleanup in the Housatonic River . Since I have waded the river a few years ago while trapping I thought I might give you some insight as to what it really is with the thought in mind about removal. It resembles a form of heavy sludge which sticks to the bottom, does not mix with water, and will not in my lifetime float away except the top layer during a heavy storm. While wading thru this I could tell that maybe a foot on the bottom was PCB,s and the top foot was water because the bottom part was difficult to wade.

So,, to clean this up a way has to be found to mix this with something to make it float, at least during flood stage, or else use a large boat with a huge revolving brush on the back that would be heavy enough to more than sink and find it's own depth by being free enough to go up or down. I don't think shallow water need be addressed as I think high water takes care of this. PCB's stay in pools. I hope you give this some thought as dredging would disrupt fish and game and forget swimming unless using the rocks as a diving board.

Your's Richard F Peters

Mr. Richard F. Peters

Hinsdale, MA 01235

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April 22, 2009

Dear Mr. Murphy,

As a canoe paddler who trains on the river 6 days a week, I would like to bring a few items to your attention.

In the past year, there has been a tremendous build up of silt along the river bottom from Pittsfield through much of the river in Lenox. In times of low water, areas of the river are almost impassable (mostly north of the New Lenox Rd. boat launch) especially in the center of the river where the current is strongest. Because of the silt, plant life in areas of the river has been covered up.

The banks of the river are also covered in a tremendous amount of sand/silt that was never there in prior years.

Also, the company that was doing environmental research on the river has left many iron bar markers stuck in the banks. Some of these have found their way into the river and are a hazard to our boats. The paddlers would appreciate it if you would ask the company to remove them.

I assume the silt/sand is a result of the clean-up work GE performed in Pittsfield two or more years ago. I cannot understand how capping can be used in any river since currents and changes in water levels due to flooding will alter the location of the sand.

Sincerely,

Patty Spector

Patty Spector

Lenox, Ma. 01240

STATE GOVERNMENT

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

May 11, 2009

Ms. Susan Svirsky
Rest of River Project Manager
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Dear Ms. Svirsky:

The Connecticut Department of Environmental Protection (CTDEP) appreciates the opportunity to provide comments on the General Electric (GE) Company's response to EPA's interim comments on the Corrective Measures Study Report for the GE/Housatonic River Site; Rest of River dated March 6, 2009. While the GE document does provide additional information to frame the original Corrective Measures Study, the report, in general, is lacking the level of specificity needed to support many of the assertions made in the current document. Additionally, several issues that are key to the restoration of environmental quality within Connecticut are not addressed adequately, and in some cases, not addressed at all. A summary of our comments are provided below.

1. The response contains many assertions that are not supported with appropriate references scientific and technical studies. Such general statements cannot be used to justify a reduction in remediation and restoration activities within the watershed. An example of one such generalization is the statement that indicate that natural geomorphic processes and habitats can't be remediated and restored. The response document does not contain any scientific or technical supporting materials to justify such assertions. For all such general statements within the report, detailed scientific and technical information should be provided.

2. The GE response focuses on comments on the Corrective Measures Study provided by EPA and the Commonwealth of Massachusetts and does not explicitly address comments provided by CTDEP.

3. The GE response does not take into consideration that the Housatonic River in Connecticut is listed as impaired pursuant to section 303d of the federal Clean Water Act and does not discuss the affect of any of the current proposals on the resolution of this impairment and eventual restoration of water quality and all designated uses of the waterbody within Connecticut. All proposed remedial activities must be directed towards the eventual

restoration of water quality and designated uses for the receiving water and removal of the waterbody from the impaired waters list for Connecticut.

4. The GE response is predicated upon the selection of remedial alternatives SED3 and FP 3 for in river and floodplain sediments, respectively. CTDEP has previously indicated that these remedial selections are inadequate and that a more aggressive remedial approach is warranted to address the PCB contamination of the Housatonic River system.

5. The report assumes that the SED3/FP3 alternative and other remedial alternatives would result in a "taking" of several Massachusetts's listed rare plant and animal species. However, GE does not offer any proposals to mitigate any potential short term impacts to these species, such as, but not limited to, capture and temporary relocation of affected species, during remedial work. As GE does not propose due diligence activities to address the potential effects of proposed activities on threatened and endangered species, the assertion that potential remediation activities would result in a "take" is not well supported. Additionally, assuming that proposed activities would result in a "take," comments should be provided on how to move forward with proposed activities within the context of this regulatory framework. Are there opportunities for on-site or off-site mitigation or other actions to provide benefit to the affected species that would allow the proposed remedial actions to continue? Additionally, there should be an evaluation of whether or not a monitored natural recovery based approach could be considered a "taking" of threatened and endangered species due to the impacts of PCBs on both individuals and populations of concern.

6. The GE response does not address the issue of impacts to threatened and endangered species within Connecticut. This should include an explicit evaluation of impacts to such species in Connecticut, both from any active or passive remediation proposed within the watershed.

7. Bank-associated sediments must be remediated and stabilized within Massachusetts since PCBs contained in these sediments contribute to the PCBs load which is transported downstream into Connecticut. The GE response document favors avoidance of active remedial actions for bank sediments.

8. CTDEP strongly disagrees with the GE response to General Comment #7 regarding sediments behind dams and institutional controls. GE is responsible for pollution at and emanating from their facility, including at the various locations within the environment to where the contamination has migrated, such as dams or other structures within the watershed. PCB contamination of sediments associated with these structures is not the responsibility of the owners of these structures, but rather the responsibility of GE as the cause of such pollution. The GE response indicates that GE expects other parties to

assume responsibility for PCB polluted sediments through the Federal Energy Regulatory Commission processes or through Water Quality Certification activities. GE indicates that owners of affected structures and dams could petition GE on an individual basis for financial compensation. This is unacceptable. As it is already well documented that the GE PCB contamination affects the sediment associated with such structures, CTDEP seeks a detailed, pre-defined plan for addressing activities at dams and other structures and associated with other permitted activities within the watershed that may be affected. It is inappropriate for GE to place the burden of planning for and paying for PCB-related activities at such structures and projects on parties that are not responsible for the contamination. The revised Corrective Measures Study document must contain a detailed, pre-defined plan to address PCBs associated with dams, other structures and other permitted activities within the watershed.

9. In their response to General Comments 11 and 12, GE does not address previous comments made by CTDEP regarding the continuance and scope of fish, benthic and other environmental monitoring needed in Connecticut. The response provided by GE that efforts would focus on maintenance of signs and "other outreach efforts" as needed is insufficient. Currently the only proposed remedy for the river in Connecticut is monitored natural recovery. Therefore, it is imperative to have a robust monitoring program in place to document whether or not the expected recovery is occurring.

10. Table GC-13 shows expected reduction in PCBs with different remedial options. The table indicates PCB reductions associated with option 1 and 2 although these options do not provide for any removal of PCBs from the environment. These options are essentially maintaining status quo which does not support the reductions as suggested.

11. Appendix E provides a list of ARARs that are potentially applicable to the remediation and restoration activities. The tables should be amended to include:

    CT Water Quality Standards (CGS 22a-426)

    CT Water Quality Certification Program (Section 410 Federal CWA)

    CT Threatened and Endangered Species - (CGS Section 26-303 through 26-316).

    Remediation Standard Regulations (22a-133k-1 through 3 RCSA)

12. The response to General Comment 14 suggests that using institutional controls such as fish consumption advisories are acceptable actions in lieu of remediation and restoration to restore the designated use of the river for fish consumption. This is in direct contravention of the requirements of the federal Clean Water Action, Section 303d, which focuses on the restoration of impaired waters to allow for attainment of designated uses of the waterbody. As fish consumption for both human and ecological receptors is a designated use for the Housatonic River in Connecticut, any institutional control that does not provide for the restoration of this use of the river is not acceptable as a permanent remedy for the impairments associated with PCBs in the watershed.

13. The response to Comment 15 discusses the use of Thin Layer Capping and Monitored Natural Recovery. CTDEP does not believe that Thin Layer Capping will provide a reliable and permanent sequestration of PCBs within the river sediments.

Thank you again for the opportunity to provide comments. CTDEP remains committed to working with EPA, the Commonwealth of Massachusetts, trustee agencies and GE to achieve the clean up and restoration of the Housatonic River watershed.

Sincerely,

Betsey Wingfield
Bureau Chief
Water Protection and Land Reuse
Connecticut Department of Environmental Protection

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May 14, 2009

Ms. Susan Svirsky
Rest of River Project Manager
United States Environmental Protection Agency
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Re: Site No. GECD850; Housatonic River Rest of River; Comments on Response to EPA's Interim Comments on CMS Report - Housatonic River - Rest of River

Dear Ms. Svirsky,

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the March 2009 document titled *Response to EPA's Interim Comments on CMS Report - Housatonic River - Rest of River*, prepared by ARCADIS, Anchor QEA and AECOM on behalf of the General Electric Company (GE) and offers for EPA's consideration the following comments:

General Observations

1. GE provided some discussion regarding a proposed Ecologically Sensitive Alternative (ESA) that EPA has agreed GE will develop. Although the required level of detail has not yet been submitted regarding the workplan, MassDEP would like to note that it supports the development of the ESA. EPA has stated in various correspondence to GE that it expects the ESA to be developed and analyzed on an "equal footing" with regard to the other alternatives that have and will be developed. In addition, EPA has proposed that GE develop a new alternative and has asked GE to analyze additional sediment remediation alternative(s) applying wet excavation techniques to remove the PCBs from sediment and river bank soil in Reaches 5A and 5B. Although MassDEP generally supports the concept of an equal footing approach and does not oppose the additional alternative EPA has proposed, the Department wants to reiterate that MassDEP is very interested in the ESA and criteria that will potentially be developed from analysis of the ESA and wants to ensure that the ESA is thoroughly reviewed and considered in the final CMS report.
2. In terms of GE's responses in general, the Department asserts that GE provides a very limited response regarding restoration considerations. GE does not provide adequate or valuable detail on restorative techniques, yet effectively concludes that restoration is not possible.

This issue will be discussed further regarding specific comments, but MassDEP stresses that it is very interested in restorative considerations and expects that GE thoroughly and objectively evaluate restoration considerations for all of the alternatives as part of the final CMS.

3. GE states in its discussion of the ESA (on page 3) that they will balance, as required by the Permit (RCRA), the goal of achieving the Interim Media Protection Goals (IMPGs) against the permanent adverse ecological effects of the remedial actions that would be necessary to achieve those IMPGs. It is not clear, however, when and how this balancing will occur. MassDEP believes it is important for GE to share their balancing assumptions so that all interested parties can consider these factors before the final CMS is submitted.

Comments Regarding Bank Stabilization Considerations

4. In GE's response to General Comment #6, GE determines that bioengineering techniques can only be used in select portions of the river along only 58% of the banks. In arriving at this total, GE includes 38% of currently eroding banks that are currently too steep to support bioengineered structures, but which could be cut back to create shallower slopes that would support the use of bioengineering, and 20% of banks having shallow slopes but which are not currently eroding. However, GE does not include an additional 30% of eroding banks that are located in areas where slopes are sufficiently shallow to allow the use of bioengineering. GE postulates that bank erosion in these areas may be due more to the undercutting and slumping of non-cohesive sediments or soils than to erosive forces acting on the banks. It is unclear from GE's discussion or from the Figures that were provided at the end of the main text, whether these banks would not be expected to erode due to their location along straight sections of channel or due to the presence of low shear stresses, and this should be clarified. However, such areas might benefit from the enhanced structural stabilization and flow-energy absorption that could be provided by some forms of bioengineering and should not be eliminated from further consideration and analysis during design. Geotechnical analyses of soils and sediments could readily provide information on the structure and stability of the underlying soils and sediments.

5. GE states that the potential benefits resulting from revegetation associated with the use of bioengineering techniques will not mitigate the harm caused by excavation and stabilization of the riverbanks. However, GE does not acknowledge the ability of bioengineering to rapidly re-establish bank stabilization through root growth using live fascines, and live stakes in connection with brush layering or brush mattresses, etc. These stabilization techniques utilize fast-rooting, fast-growing species such as red osier dogwood and willows, to stabilize the soil and provide some degree of shade in a relatively short period of time. GE also does not explore other bioengineering techniques, such as groynes, rock barbs, cross-vanes, and J-hook vanes that can be used in-channel to redirect erosional forces away from banks and into the center of the channel. Use of such structures would not require that certain bank habitats be altered. A number of these structures also have the added benefit of creating flow variations in the river which enhance in-channel habitat. MassDEP recommends that, as part of its further exploration of bioengineering, GE be required to explore the various pros and cons of using a variety of bioengineering options.

6. In closing its response to Comment #6, GE states that the "appropriateness of bioengineering techniques requires not only a more detailed engineering analysis of a number of critical

design criteria, such as the frequency and duration of peak flows, sediment transport, and bank soil properties, but also a full consideration of the ecological harm that would be caused by this or any stabilization method." MassDEP encourages EPA to require GE to perform these more detailed analyses utilizing up-to-date bioengineering references and also include a discussion of the ecological benefits of removing polychlorinated biphenyl (PCB) contamination and providing source removal/control.

Comments Regarding Restoration

7. In GE's response to General Comment #29, GE states that "GE believes, as a legal matter, that certain substantive requirements relating to restoration of affected resources and/or compensatory mitigation for effects on such resources would exceed EPA's remedial authority under CERCLA, the CD, and the RCRA Permit, and would actually amount to actions to address natural resource damages." We disagree with this statement. MassDEP further notes that since restoration of natural resources that are affected by cleanup work is required to meet the substantive requirements of the Wetlands Protection Regulations (310 CMR 10.53), and the Massachusetts Endangered Species Act Regulations (321 CMR 10.00), both ARARs, MassDEP believes that this restoration work must be performed as part of the required cleanup.

8. In the text of the Report, GE devotes 94 pages to addressing EPA's General Comment #10. Section I seems to adequately identify the existing ecological functions, services and conditions of the habitats that may be affected by the work. However, Sections II and III spend considerable time discussing and reiterating significant adverse impacts of the proposed work and restoration efforts and GE's perception that most forms of restoration will never be successful. In the Report, there is considerably less discussion of actual restoration methods. The comments focus heavily on perceived impacts and overshadow the potential successes and benefits of various restoration techniques. MassDEP believes that GE should be required to submit an addendum to this section that focuses and expands upon the requirements laid out in EPA's original directive. MassDEP also believes that GE's performance of the in-depth evaluations required with Specific Comment #42 (discussed on page 6 of this document) will be helpful in creating this addendum.

9. MassDEP recognizes that the river characteristics and urban nature of the 0.5 and 1.5 mile reaches of the Housatonic River are substantially different than the Rest of River and therefore require different restorative considerations. Nonetheless, MassDEP believes that GE should consider the restorative progress to date in the 0.5 and 1.5 mile reaches when evaluating the feasibility of restoration in the Rest of River. The restorative progress in the 0.5 and 1.5 mile reaches includes, without limitation, the planting of a variety of fast-growing trees and shrubs, flow diversification as a result of in-channel structures such as weirs and boulder clusters, sediment deposition resulting in the recolonization of aquatic emergent vegetation, and increases in taxa and EPT richness and dominance relative to the 2000 samples. There are other restoration techniques appropriate for the unique natural resources in the Rest of River, which should not be dismissed without careful consideration of feasibility, benefits and disadvantages.

10. In the text, GE spends considerable time explaining why it thinks that all wetland restoration programs will be unsuccessful and, therefore, work should be proposed so as to avoid or minimize adverse impacts. Although most Massachusetts ARARs emphasize the need to

avoid and minimize adverse impacts to wetland systems, they also recognize that all impacts may not be avoided or eliminated and allow for the mitigation of impacts through restoration or replication of wetlands. Whereas MassDEP recognizes some of the challenges that are associated with wetland restoration projects, it also recognizes that some impacts to some types of wetland resource areas at the site will be necessary in order to perform remedial activities to address PCB contamination at the site. MassDEP also recognizes that properly-implemented wetland restoration projects can be successful if they are researched, designed and implemented with care and contain appropriate monitoring components. To assist in the successful restoration or replication of wetland areas, MassDEP has developed two guidance documents that should be consulted. These are: *Massachusetts Inland Wetland Replication Guidelines* (Guidance No.: BRP/DWM/WetG02-2; March 1, 2002) and *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands* (March 2006).

11. GE expresses concern over the loss of woody debris within the river channel post-remediation, since it provides habitat and alters localized flow and deposition patterns, and notes that if large trees are removed from the riverbank, there will no longer be an ongoing source of large, woody debris available. In areas where remediation is more extensive or capping may be otherwise unnecessary, woody debris could be placed at the edges of the channel. In addition, in some locations, large trees may be able to be left in place (relative to bank remediation) or impacts could be avoided (through the careful placement of access roads).

12. On page 71 of the text, GE states that "depending upon the extent of potentially impacted riverine wetland areas, plantings of emergent vegetation would be considered." MassDEP notes that, according to the Wetlands Protection Act ARAR, if such vegetation is determined to provide important habitat functions, as it likely will for some state-listed species, at a minimum, replication will likely be required and will not be up to GE's discretion.

13. In several sections of the Report, GE states that even if GE is successful in replicating pre-existing elevations, micro-topography, and ground contours for resource areas such as forested wetlands, "changes to the topography of the overall floodplain upstream or downstream of the affected area may alter the discrete flood flows that dictate the recovery" of the communities. Considering that the Wetlands Protection Act Regulations require the provision of compensatory storage for filling within the floodplain, it is unclear how such changes in floodplain topography could affect restoration areas. Nevertheless, even if such changes did occur, they would affect natural wetlands as well as restored wetlands. Therefore, MassDEP does not consider potential, but unlikely changes in floodplain topography as adequate justification for not restoring altered wetlands.

14. GE should clarify why protecting or restoring existing forested riparian and upland corridors to widths as large as 1,000 feet is essential to maintain the biodiversity and ecosystem functions of the Housatonic River corridor.

15. GE states concerns that the heavy equipment used in remediation and restoration activities will result in long-term soil compaction that will make the soils less amenable to use by burrowing wildlife and hinder or prolong the reestablishment of the plant community, and that soil scarification would not prevent the impacts of soil compaction altogether. MassDEP maintains that soil compaction should be minimized by minimizing the length, width and number of access roads and the sizes of staging areas, and by using smaller-sized equipment

in areas such as vernal pools where excavation areas and depths may be minimal and where it is important to preserve areas of surrounding habitat. MassDEP also notes that at past GE remediation sites, compaction problems, when they occurred, have been satisfactorily rectified and have not been encountered at most sites, including wetland restoration areas.

16. GE presents a number of arguments why it considers successful vernal pool restoration to be highly unlikely. However, GE fails to acknowledge a potentially successful vernal pool restoration project on one of the Phase 4 floodplain properties. This vernal pool was remediated three years ago and both wood frog egg masses and fairy shrimp (both obligate species) were observed this season. Caddisfly and stonefly larvae, as well as a number of other invertebrates were also found within the pool. Duckweed and water plantain were found in the pool and rushes were observed growing on the edges of the pool. In this restoration, GE replaced large woody debris and planted wetland shrubs on the one side of the pool where vegetation had to be removed in order to allow the remedial work to go forward. For the most part, however, work was able to be undertaken without having to cut most of the trees and shrubs in the surrounding forest, contrary to what GE suggests would have to occur when remediating vernal pools at the Rest of River site. GE expresses a concern about the loss of leaf litter and, therefore, important habitat in restored vernal pools. However, the Department notes that at least one major leaf-composting operation exists in Berkshire County, and GE may be able to locate other regional leaf composting operations as potential sources of leaf litter for work in the vernal pools. MassDEP further notes that the Commonwealth has developed guidelines and requirements for successfully restoring vernal pool habitat and restoring areas of surrounding terrain that have been adversely impacted by vernal pool remediation and reconstruction activities. This guidance should be reviewed by GE.

Comments regarding EREs

17. In GE's response to General Comment #23, GE states that whereas it intends to obtain Grants of Environmental Restrictions and Easements (EREs) for Rest of River properties owned by GE, the City of Pittsfield and the Commonwealth of Massachusetts and either obtain EREs or implement a Conditional Solution for certain types of properties where a given use is reasonably anticipated but which would not reach the applicable cleanup standards for that use. GE further states that for the Rest of River, "it would not be practical to implement the ERE/Conditional Solution approach for all of the many properties in the floodplain that could have possible uses with potentially greater exposures than current uses and that would not meet the most restrictive possible standards." GE then asserts that it should not have to address the theoretical possibility that certain properties may some day be converted to residential and agricultural use and that the ERE/Conditional Solution approach should be restricted to those properties where a change in use involving greater exposure potential is actually reasonably anticipated, based on some objective measure. GE does not elaborate on what such objective measures would be. For properties for which changes from current use are not reasonably anticipated (by GE), GE recommends that such properties be subject to EPA's periodic 5-year reviews and states that such periodic reviews are designed to evaluate potential changes in circumstances and conditions that could affect the protectiveness of the remedy.

    Throughout the Rest of River human health risk assessment process, MassDEP has always maintained that all floodplain properties that would not be cleaned up to levels protective of

unrestricted use and for which foreseeable changes in uses could be reasonably anticipated would either have deed restrictions or Conditional Solutions. MassDEP currently does not believe that any floodplain properties exist which could not be changed to recreational or agricultural uses in the foreseeable future, hence either EREs or Conditional Solutions should be required on all such properties. However, GE may provide additional property-specific justification, for consideration, regarding why it does not deem EREs or Conditional Solutions necessary for such properties and list what objective measures that it intends to utilize in making its determination as to why no EREs or Conditional Solutions are necessary.

Comments Regarding ARARs

18. In both the text and in a series of tables, GE provides a response to EPA's General Comment #27 that addresses ARARs. Throughout its discussion of ARAR compliance in the tables, GE repeatedly states that all existing removal alternatives will fail to meet various Massachusetts ARARs. MassDEP believes that it is premature to determine ARAR compliance, especially since the revised CMS will provide significantly more information and analysis upon which the remedy selection will be based. In addition, compliance with ARARs should not be evaluated for the project as a whole, but rather, should be evaluated for different components of the remedy.

Comments Regarding Specific Comment #42

19. In its October 30, 2008 letter clarifying its requirements concerning its Specific Comment #42, EPA asked GE to perform an area-specific analysis of how impacts to a rare species and its associated Priority Habitat (within the Rest of River site boundary) and to natural communities from the implementation of infrastructure requirements could be avoided and to show how unavoidable impacts to riverbanks and the channel can be restored. EPA identified six specific, unique areas within the Primary Study Area (the PSA) that pose unique remedial challenges and asked that GE explain, in detail, how it would design its remedial plans to addresses each of the specific challenges. MassDEP believes that this exercise would serve a valuable and essential function in focusing on a variety of site issues that must be addressed and to perform some detailed problem-solving that will be necessary in fully and properly evaluating all remedial alternatives. GE has touched briefly on some of these issues in its response to General Comment #10 and Specific Comment #77, and others. However, GE clearly states that it has postponed its performance of this evaluation until after it submits a work plan describing the proposed ESA with the explanation that this alternative should also be evaluated during this exercise. MassDEP disagrees with this postponement, because the outcomes of performing the evaluations required under this exercise may have resulted in changes to a number of comments provided in the report and a more positive representation of the feasibility of performing remedial activities at the site in a manner that avoids, minimizes and mitigates impacts.

Comments Regarding IMPGs

20. In the Report, GE questions the validity of many of the ecological IMPGs, due to its disagreement over certain aspects of ecological risk assessment. Moving forward, MassDEP believes that GE's focus should be on the development and thorough vetting of an appropriate remedy for the Rest of River that balances the goal of achieving the IMPGs

against the adverse ecological impacts of the remedial actions necessary to achieve the IMPGs.

Sincerely,

Laurie Burt
Commissioner
Massachusetts Department of Environmental Protection

cc: GE – Rod McLaren, Michael Carroll, Dick Gates
EPA – Richard Cavagnero, Tim Conway, Dean Tagliaferro, John Kilborn, Holly Inglis
EEA – Ian Bowles, Ken Kimmell
MassDEP –Lucy Edmondson, Janine Commerford, Michael Gorski, Eva Tor, Jeff Mickelson, Paul Locke
DFG/DFW – Mary Griffin, Wayne MacCallum, Richard Lehan, Mark Tisa

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May 15, 2009

Ms. Susan Svirsky

Rest of River Project Manager

United States Environmental Protection Agency

c/o Weston Solutions

10 Lyman Street

Pittsfield, MA 01201

Re: Housatonic Rest of River: Comments on GE March 2009 Response

Dear Ms. Svirsky:

The Executive Office of Energy and Environmental Affairs is pleased to submit comments on General Electric's March 2009 Corrective Measures Study. Attached to this letter are detailed comment letters from the Department of Environmental Protection and the Department of Fish and Game. Several key themes emerge from these comment letters, which I wish to highlight.

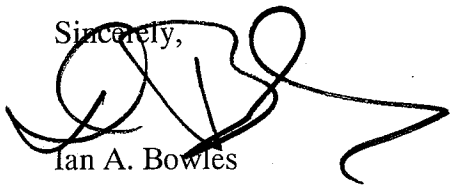
First, we believe that it is essential that the so-called "ecologically sensitive alternative" continue to be placed on an equal footing with other alternative remedies described to date, consistent with the commitment EPA made to that objective several months ago.

Second, we believe that GE has provided limited data on a number of key issues, such as the potential for restoration, and the impact on rare species caused by various remedial options. In order to make an informed choice about the remedy for the rest of the river, a considerable amount more information needs to be gathered and presented in a clear and transparent manner.

We look forward to further development of the record and working cooperatively with EPA and other stakeholders to ensure that we make a wise choice about this highly important matter.

Thank you for giving us the opportunity to provide input to you.

Sincerely,



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May 8, 2009

Ms. Susan Svirsky
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Re: GE's March 9, 2009 Response to EPA's Interim Comments on GE's March, 2008 Corrective Measures Study

Dear Ms. Svirsky:

The Department of Fish and Game (the "Department" or "DFG") and its Division of Fisheries and Wildlife (the "Division" or "DFW") hereby submit our comments on GE's March 9, 2009 Response to EPA's Interim Comments on GE's March, 2008 Corrective Measures Study ("CMS") for the Rest of River ("ROR") phase of the remediation of the Housatonic River Site. Section I contains an introduction that provides background and context for our specific comments, which are set forth in Section II.

I. Introduction

As a condition of the October 27, 2000 Consent Decree, GE was required to prepare a Corrective Measures Study ("CMS") to reduce as well as manage the downstream transport of, and exposure to, PCBs in the ROR that would meet both human health and ecological Interim Media Protection Goals ("IMPGs") established by EPA. In March 2008, GE submitted their CMS which evaluated eight (8) PCB reduction and management alternatives as prescribed by EPA. The public had until May 20, 2008, to review provide comments to EPA on the adequacy and completeness of the CMS to EPA.

DFW reviewed the CMS and in a letter dated May 19, 2008, outlined the dramatic impacts to a range of fisheries and wildlife, including state-listed species and their habitats, arising out of the eight (8) alternatives analyzed in the CMS. DFW also emphasized the critical need for a comprehensive and detailed analysis of how impacts to fisheries and wildlife can be avoided and minimized in the first instance. If such impacts

cannot be avoided, then the CMS must thoroughly analyze how the affected fish and wildlife species and their habitats will be fully restored in accordance with all applicable and relevant federal and state laws ("ARARs"), such as the MA Endangered Species Act, M.G.L. c. 131A ("MESA"). Only then can EPA, the Commonwealth and the public get a complete picture of the true "cost" of the alternatives under consideration in the CMS.

Following the close of the public comment period on GE's March, 2008 CMS, EPA met with the Commonwealth (EEA, DEP and DFG/DFW) to discuss their comments on the CMS. In a letter to GE on September 9, 2008, EPA, in consultation with the Commonwealth, set forth a comprehensive set of 166 comments on GE's March 2008 CMS. EPA, also with input from the Commonwealth, sent a follow-up letter dated October 30, 2008 further defining how GE should respond to Specific Comment 42 (detailing habitat restoration) in EPA's comments dated September 9, 2008. EPA directed GE to conduct comprehensive analysis of six (6) scenarios involving different habitats with unique characteristics in the river and floodplain areas of the ROR. The focus of this critical analysis relative to Comment 42 is to describe in detail the plans, processes and methods to be used to avoid, minimize, mitigate and restore fish and wildlife habitats in this important and unique environmental area of the Housatonic River.

In response to comments by EPA, the Commonwealth and the public on the March, 2008 CMS, GE began additional evaluations of the ecological impacts of the alternatives analyzed in the CMS. In a December 2008 meeting, GE presented to EPA and the Commonwealth (EEA, DEP and DFG/DFW), a conceptual framework for a new approach for balancing on how to reduce PCBs in the ROR to meet the ecological IMPGs while still protecting and maintaining sensitive fisheries and wildlife species, habitats and resources (such as MESA state-listed species and vernal pools). GE termed this approach their "Ecologically Sensitive Alternative." Given what is at stake for the Housatonic River ecosystem, the Commonwealth supported GE's request to EPA to fully develop their Ecologically Sensitive Alternative for inclusion as a ninth alternative along with the original 8 alternatives into a revised CMS. In a letter dated January 16, 2009, EPA authorized GE to fully develop this new alternative and to evaluate it on an equal footing with the existing suite of alternatives (original 8 alternatives) in the revised CMS expected sometime around the end of calendar year 2009. We appreciate this action by EPA, and look forward to actively commenting on the development and evaluation process for the Ecologically Sensitive Alternative in the context of a substantially expanded and revised CMS that is fully responsive to the universe of comments by EPA, the Commonwealth and the public on GE's initial CMS.

On March 9, 2009, GE responded, in part, to EPA's September 9, 2008, comments on their March 2008 CMS. As GE acknowledges in the introduction to its March 9, 2009 Response, there was widespread criticism by Commonwealth and the public of the adequacy of GE's March, 2008 CMS. Subsequently, another important development with direct implications for ROR remedy is the Secretary of EOEEA's designation of the Upper Housatonic River as an Area of Critical Environmental Concern ("ACEC") on March 30, 2009. DFW and DFG, in letters dated January 29th and February 3rd 2009 respectively, offered their unconditional support for the ACEC proposal, highlighting the reasons why the Upper Housatonic River clearly met the criteria for designation as a unique ecosystem of regional significance. We view the

ACEC designation as fully consistent with the ecological values and concerns identified in our previous comment letter on the CMS, and as further ensuring that these matters are accorded their proper weight in the CMS evaluation. GE will therefore need to modify its ARAR analysis, as applicable, to thoroughly assess the effect of the ACEC designation on the range of alternatives in the revised CMS.

With the above background noted, DFG and DFW have set forth their specific comments on key priority issues identified in our review of GE's March 9th response. The fact that these specific comments do not comprehensively address GE's entire March 9th response does not mean that we have definitively determined that we have no questions or comments on these other areas. Instead, in the interests of providing advance notice of our core concerns, DFG and DFW have focused our review on a subset of priority matters, with the understanding that we will continue to actively participate as a Commonwealth stakeholder in the review of the upcoming revised CMS encompassing the GE's response to SC 42 as well as an evaluation of their Ecologically Sensitive Alternative on an equal footing with the other eight remedial alternatives.

II. Comments on GE's March 9, 2009 Response

The MESA Assessment in Appendix B

A. Introduction and Summary of Comments

Appendix B of contains GE's preliminary assessment of Massachusetts Endangered Species Act ("MESA") regulatory compliance outcomes associated with the various remedial alternatives (the "MESA Assessment"). The Introduction to this Assessment highlights the scope of important and diverse populations of state-listed species that are located within 1038 acre Primary Study Area ("PSA") of the ROR. Specifically, GE noted that 98% of the entire PSA is located within Priority Habitat. Table 1 identifies the 28 state-listed species for NHESP-designated Priority Habitats between the confluence of the East and West Branches of the Housatonic River and Woods Pond Dam. GE also noted that the Division is currently conducting a two year detailed survey to further investigate the presence of state-listed species within the Upper Housatonic River Valley.

GE's Introduction also summarizes the key components of the Division's MESA regulations at 321 CMR 10.00 that necessarily apply to any assessment of impacts to state-listed species resulting from the implementation of the range of remedial alternatives in the CMS. In summary, the MESA regulations provide that any project or activity that will take place in Priority Habitat must be reviewed by the Division prior to the commencement of work in the Priority Habitat. The purpose of this review is for the Division to determine whether the project or activity will result in a "take"[1] of a state-listed species. See 321 CMR 10.18. If the Division determines that a take will occur under MESA, the project or activity must either be modified to eliminate the take or the

[1] "Take" is broadly defined in the MESA regulations to include the killing or harming of such animals as well as the disruption of nesting, breeding, feeding or migratory activity resulting from the destruction, modification or degradation of their habitat. "Take" also includes the killing, collection and picking of rare plants. See 321 CMR 10.01.

proponent must obtain a conservation and management permit from the Division pursuant to 310 CMR 10.23. More specifically, in addition to showing that the impacts from the remedial action have been avoided, minimized and mitigated, three substantive performance standards must be met in order to authorize a take under MESA:

1. there has been an adequate assessment of alternatives to both temporary and permanent impacts;

2. only an insignificant portion of the local population of the affected state-listed species will be impacted, and

3. a Division-approved conservation and management plan provides for the long-term Net Benefit[2] for the conservation of the state-listed species.

See 321 CMR 10.23(2)(a)-(c).

Finally, under 321 CMR 10.23(3), the Division has the discretion to allow the implementation of an off-site mitigation plan to meet the Net Benefit performance standard, provided there has been a showing that a Net Benefit cannot be provided on-site despite every reasonable effort being made to avoid, minimize and mitigate impacts on-site. A proponent may demonstrate compliance with the Net Benefit standing by providing for financial or in-kind contributions towards the development and/or implementation of an off-site conservation recovery and protection plan for the impacted species.

With this MESA regulatory framework in mind, GE's MESA Assessment in Appendix B presents, for each state-listed species occurring within the PSA:

1. An evaluation of short and long-term impacts to each state-listed species and its habitat that would result from implementation of each remedial alternative.

2. Consideration of measures that could be undertaken in advance of and during remediation in order to avoid or minimize impacts to state-listed species and their habitats.

3. An assessment of whether a given alternative would result in a "take" of each affected state-listed species, and if so, whether the remediation would impact a "significant" portion of the local population, as required by 321 CMR 10.23 (2)(b).

4. For cases where a take would occur, but would impact an insignificant portion of the local population, whether measures could be undertaken to provide a long-term "Net-Benefit" to the affected species, as also required by 321 CMR 10.23(2)(c).

[2] "Net Benefit" is defined in the MESA regulations to mean (1) an action(s) that contribute significantly to the long-term conservation of a state-listed species, and (2) that conservation contribution exceeds the harm caused by the proposed project or activity. See 321 CMR 10.01.

As acknowledged in the MESA assessment, an attempt to conduct this type of analysis for all 28 state-listed species occurring within the PSA for each remedial alternative is a challenging task. The Department and the Division appreciate this effort to begin to assess endangered species impacts, and concur with GE that, "in view of the documented occurrence of these [28] rare species and the associated high quality and unique habitat conditions within the PSA, an important consideration in the evaluation of remedial alternatives is the avoidance, minimization, and mitigation of impacts to these MESA-listed species." See Appendix B, p. 2. However, some of the conclusions reached by GE in the MESA Assessment are premature, particularly as they relate to whether and the extent to which the "insignificant impact on the local population" and "net-benefit" performance standards in 321 CMR 10.23 can be achieved under the various remediation scenarios in the CMS.

Our key comments and concerns are summarized immediately below. In part B that follows is a more detailed discussion that includes illustrative examples.

Summary of Key Comments and Concerns

- GE's analysis of insignificant impact to the local population is based on an overly narrow definition of the "local population" in many cases. This potentially leads to an overstatement of the number of cases where this MESA performance standard could not be met.

- The MESA Assessment assumes that a given state-listed species is equally distributed throughout the "Priority Habitat of Subject Species." As the actual distribution of a species may be clumped and habitat quality can vary considerably across the landscape, this assumption leads to potentially inaccurate conclusions regarding insignificant impact and the feasibility of minimizing impacts as remediation is implemented.

- The MESA Assessment assumes that impacts of >20% of the acreage of Priority Habitat of Subject Species would necessarily result in a significant impact to affected local populations. This assumption is likely to be flawed for the reasons listed above, and therefore likely overstates the number of species for which the insignificant impact threshold could not be met.

- The analysis of potential to provide net-benefit mitigation does not consider a wide variety of options for habitat management, conservation planning/research, and habitat protection both within and outside of the PSA. As noted above, "off-site" mitigation is an available option under the MESA regulations, and many of the species to be affected are known to occur within the Commonwealth but outside of the PSA. Therefore, net-benefit mitigation may be achievable more broadly than suggested in GE's MESA Assessment. Furthermore, many species were not evaluated for the potential to achieve "Net Benefit" because it was assumed that the insignificant impact standard could not be met.

- The insignificant impact on local population and the net-benefit performance standards in 321 CMR 10.23(2)(b) and (c) respectively are interrelated, in that certain forms of mitigation are designed to enhance the local population, thereby lessening

the overall impact of a project. For this reason, DFW typically requires an applicant to evaluate whether a net benefit can be provided, even in cases where there is a preliminary assessment that the activity will impact a significant portion of the local population. This approach is appropriate because after-the-fact habitat management and habitat restoration could off-set remediation impacts in certain cases, which should be considered in evaluating the level of impact on the local population resulting from a particular remedial alternative in site-specific locations.

- As noted above, in order to authorize a take, 321 CMR 10.23(2)(b) requires that there be an "insignificant impact" to the *local* population of the affected state-listed species. In comparison, 321 CMR 10.23(2)(c) requires that a "net-benefit" be provided to the affected state-listed species *as a whole* (i.e., beyond the geographic location of the local population of that species). Even in cases where there is no dispute that there will be an impact on a significant portion of the local population, the Division would still request EPA to require GE to determine whether a Net Benefit can be provided to the conservation of the affected state-listed species, as a means of ensuring compliance with the MESA performance standards to the maximum extent possible.

As we noted at the outset and as underscored by our key comments above, a MESA assessment of this magnitude is complex from both a technical and regulatory perspective, and requires information about the distribution of state-listed species both within and outside of the PSA, and as well direct input from the Division's NHESP. Therefore, we request that GE consult directly with the Division's NHESP[3] as GE refines its MESA assessment in response to comments from the Department and the Division, EPA and other stakeholders. In short, GE's revised MESA assessment should consider in greater detail remediation options that would avoid and minimize impacts to state-listed species as well as more accurately quantify impacts to state-listed species. Finally, GE will need to undertake, in consultation with NHESP, a more thorough analysis of application of the insignificant impact and net-benefit performance standards to the range of remedial alternatives, including GE's proposed Ecologically Sensitive Alternative, and assess the related mitigation options.

B. Specific Comments and Examples

- **DEFINITION OF LOCAL POPULATION** – The methodology used by GE assumed that the local population was limited to the area of the Housatonic in the PSA (ROR Reaches 5A, 5B, 5C and 6). However, the local population of many of the state-listed species should be more broadly defined (e.g., as the entire river or river basin, depending on the species and presence of barriers to dispersal).

    - **EX. 1.** In the entire ROR, there are four distinct occurrences of Bristly Buttercup (*Ranunculus pensylvanicus*), which in aggregate cover 173 acres. GE's analysis suggests that there are only two areas of areas of habitat (covering about 73 acres). Additionally, there are populations outside of the ROR but within the Housatonic River Basin. Consequently, it is our view that

[3] GE's consultation with NHESP should be coordinated through Jon Regosin, Ph.D., Regulatory Review Manager.

the "local population" would likely include the four occurrences within the ROR as well as these two occurrences.

- **EX 2.** The analysis for Common Moorhen assumes that the local population of Moorhen at issue occurs within the two areas shown in Figure E. However, because the Common Moorhen is capable of flight, limiting the "local population" to the small Study Area does not adequately take into account the considerable dispersal and movement ability of this species, nor the interconnectedness of various subpopulations across the broader landscape.

- **EX 3.** DFW biologists have determined using radio-telemetry that individual Wood Turtles travel regularly from the main-stem of the Housatonic River into tributaries located well outside of the PSA. Specifically, individual turtles have moved from the confluence into the SE Branch of the Housatonic and Upper West Branch. Therefore, limiting the local population to the PSA does not reflect the broader-scale movements that have been observed.

- **EX 4.** The analysis of Zebra Clubtail suggests that the local population would be limited to the area shown in Figure M. However, the Division's NHESP database indicates that Zebra Clubtails occur along the entire length of the Housatonic River, from the confluence to the Connecticut Border. Therefore impacts within Reach 5A, 5B, 5C, and 6 represent not an elimination of >90% of the possible habitat, as would be indicated by GE's analysis, but closer to impact +/- 16% of available habitat. While this still may constitute a "take" due to substantial localized affects and individual mortality, DFW does not necessarily agree with GE's conclusion that this impact would not be permittable pursuant to MESA.

THE UNDERSTANDING OF "PRIORITY HABITAT OF SUBJECT SPECIES." - GE's analysis assumes that a given state-listed species is evenly distributed throughout the "Priority Habitat of Subject Species." However, this conservative approach is not one that is necessarily consistent with an analysis driven by the biology of the affected species. Further, such an approach equates geographic area with the definition of a local population. It is important to remember that the individual species-specific polygons that the Division provided to GE represent the extent of likely habitat for the particular species in a particular location, not the extent of the "local population." Because the actual distribution of a state-listed species may be clumped and habitat quality can vary considerably across the landscape, the assumption that a state-listed species is evenly distributed throughout a Priority Habitat leads to potentially inaccurate conclusions regarding insignificant impact to the local population and the feasibility of avoiding and minimizing impacts from remediation activities.

- **EX 1.** Common Moorhen. GE's analysis assumes that the incremental differences in acreage of disturbance and location of disturbance between the various alternatives are the significant factors to evaluate. However, this species requires a specific wetland type and flooding regime to persist. GE did not address how perturbations to these factors will drive impacts to the species, but largely limited its analysis to acreage of direct disturbance.

- **EX 2.** For the Eastern Veined White, the Division concurs that the areas shown in Figure J do likely represent the entire habitat of the local population. This does raise a serious question about whether there will be a significant impact to the local population. However, the area from about 300 meter north of new Lenox Road south to the end of the polygon contains the vast majority of this population. Therefore, the impacts to habitat are not equal throughout this entire Priority Habitat polygon. The population likely can tolerate some level of disturbance in the northern section of the polygon.

  Further, the persistence of this population is not simply a matter of geographic occurrence. This species forages almost exclusively on various cuckoo-flower species (*Cardamine* sp.) at this location. This host plant requires a particular flooding and microhabitat regime to persist. Without the persistence of the host plant, the persistence of the Eastern Veined White would be highly doubtful. Therefore, GE's analysis should not be limited to the acreage of disturbance only, but also take into account the post-remediation condition and the ability of that condition to allow for the cuckoo-flower to persist. Finally, impacts to this population could possibly be mitigated by phasing work in their habitat, thereby allowing time for recovery to occur before affecting another large area.

- **EX 3.** Fen Cuckoo Flower. As correctly stated in GE's analysis, none of the proposed remediation options will occur within the documented habitat of this species. However, the Fen Cuckoo Flower occurs within a small fen just outside the 1 mg/kg PCB isopleth. Several of the alternatives would involve significant armoring of the river and floodplains, which could have substantial effects on the connectivity between the river and the floodplain. While the habitat for the Fen Cuckoo Flower is partially maintained by seepage from the west, the river may affect the fen's hydrology and nutrient regime. GE's analysis of this and other state-listed species focuses on the direct footprint of impact and fails to adequately analyze these types of indirect effects.

- **CONSTRUCTION TIMING TO MINIMIZE RARE SPECIES IMPACT. (Figure 2).** GE conducted an analysis of timing of construction impacts relative to state-listed species. However, the analysis did not include consideration of certain activities (i.e., excavation versus water level manipulation or survey window versus impact window) and is overly narrow in scope. For many species, the indicated time-periods reflect the survey and transplantation window, which should not necessarily be equated with an appropriate work window.

  - For example, in GE's MESA assessment the only months during which work in Triangle Floater habitat is recommended are July, August, September. This is not the approach that we recommend for this state-listed species. Surveys to locate and translocate these species must occur during the months indicated. However, once translocated, these species do not move significant distances. In the Division's experience, provided

work commenced shortly after translocation, little direct mortality to this species would be anticipated and time-limits associated with the actual work would not be needed.

- GE recommends work in American Bittern habitat during November through March only. This time period encompasses post-breeding until the time that adults migrate back to Massachusetts to breed. Although this approach may be ideal for large-scale projects in breeding habitat, the Division has sometimes allowed work to be initiated prior to spring migration when males arrive back in Massachusetts to establish territories, and to remain ongoing during the nesting season. Although this timing approach may require compliance with the MESA permitting standards, it ensures that breeding pairs will select alternative territories rather than be disrupted in the midst of breeding.

- For a number of plants (ex., Bristly buttercup, Culver's root, Fen cuckoo flower, etc.), work windows suggested by GE are largely coincident with winter senescence of the plants. However, if the particular alternative under discussion would directly kill the plants present, then the time of year one does this activity is irrelevant. What's relevant is the time of year when plants could be removed and transplanted prior to initiation of work that would result in a "take" of the plants. For annual plants, the relevant time period may be the time when seeds are available for collection and storing for later use in re-planting in the post-remedial condition. Therefore, the Division typically requires that plant surveys, transplantation, and seed collection occur at the biologically relevant time-period. Once the rare plant is moved or seed collected, we would not impose a limitation on when work could occur.

- Ex. Wood Turtle. Work is recommended between November and March only, which is approximately consistent with the over-wintering period of Wood Turtles in Massachusetts. However, Wood Turtle in this section of the Housatonic typically only over-winter in un-beaver impounded sections of the River with overhanging banks or logs jams along the banks and bottom. For that reason, it would be highly unlikely for the Division to recommend that work within the Bank and River take place during this time. For example, work could occur within terrestrial portions of the Wood Turtle habitat during the overwintering period. Thus, it is the nature of work within the affected state-listed species' micro-habitat that is determinative of the appropriate work-window.

- **ANALYSIS OF 'NET BENEFIT'.** In the context of reviewing an application for a Conservation and Management Permit under 321 CMR 10.23, the Division considers a range of options, consistent with the scale and nature of the project, that the applicant may employ to achieve the 'Net Benefit' performance standard. As noted above, while the MESA regulations prioritize efforts to mitigate on-site, they also expressly give the Division the discretion to allow off-site mitigation. In its MESA Assessment, whenever GE concluded that an alternative would have a significant impact on the local population, GE stated that consideration of whether

a Net Benefit could be provided was "N/A" (not applicable). The Division disagrees with GE's approach, and believes that consideration of whether a Net Benefit can be provided should occur even in cases where an applicant and/or NHESP has preliminarily concluded that there will be a significant impact on the local population of the affected state-listed species. As noted in the above summary of our comments, one reason for taking this approach is that there are cases where providing a Net Benefit to the conservation of the affected state-listed species has the effect of sufficiently mitigating the impact on the local population of that species.

The examples below more specifically identify our concerns with GE's application of the performance standards under 321 CMR 10.23.

- **EX.** Common Moorhen (table E-2) & Water Shrew (table F-3). 'GE determined, depending on the alternative, that the Net Benefit standard was either N/A or it could not be established whether a Net Benefit could be provided. Again, in the Division's view, it is premature to conclude that the Net Benefit standard is not applicable. Moreover, while there is a limited amount of literature to support habitat management, GE's analysis failed to consider land protection, restoration of marsh habitat, funding of research or inventory for this species, and other options the Division routinely considers when evaluating a permit applicant's compliance with the performance standards at 321 CMR 10.23.

- **EX.** Zebra Clubtail (table M-2). GE concludes for all alternatives except one that the Net Benefit standard is N/A because a significant portion of the local population would be affected. This approach is deficient because there was no evaluation of the feasibility of conducting research on emergence, adult and larval microhabitat use, land protection, or a variety of other options that the Division would consider when evaluating a permit applicant's compliance with the performance standards at 321 CMR 10.23, including evaluating the extent to which the proposed Net Benefit to the state-listed species mitigates the impact on the local population of the species.

- **SCIENTIFIC BASIS FOR UTILIZATION OF 20% IMPACT.** (page 6). GE's summary description of its methodology for determining whether a significant portion of the local population would be impacted by a remedial alternative (see p.6) is predicated on analysis of the impact by acreage, with some modifying factors. As a general rule, GE determined that impacts to less than 10% of a Priority Habitat polygon were considered to impact less than a significant portion of the local population. Impacts to greater than 20% of a Priority Habitat polygon were generally considered to impact a significant portion of the local population.

  GE provided no justification or technical basis for the above metrics, including why this approach was implemented across the board rather than taking into account the biology, population structure, habitat affinities, and vagility (i.e., the ability to persist) of each affected state-listed species. For example, a 20% impact on an annual plant that drops seed (Gray's Sedge) is not equivalent to a 20%

impact on a perennial plant that comes back annually from a base colony of plants (Foxtail Sedge). The factors that lead to successful reproduction are complex for many plants (e.g., Narrow-leaved Beauty, Fen Cuckoo Flower) and seed germination is critical for others (e.g., Gray's Sedge).

Accordingly, the Division applies an approach to determining the impact on the local population that varies by species. For example, we generally allow for a 30% impact of habitat on large projects associated with certain state-listed species, such as the Eastern Box Turtle. For other vertebrates, the Division may allow a relatively large impact on certain habitat types and not others due to the particular species biology. In short, the analysis of presumed impact to the local population needs to be specific to each species, consider micro-habitat or activity centers, and other key factors associated with the population biology of the species. For these reasons, development of methods for evaluating insignificant impact for each affected state-listed species requires direct consultation with the Division's NHESP.

- BALD EAGLE. Contrary to GE's analysis, the Division has documentation that there is at least one nesting site for Bald Eagles in the PSA. Even so, the Division would not consider that one nest site to constitute the "local population" of the Bald Eagle because it is not a biologically relevant approach to this species. Impacts to this single nest site would constitute a "take" of the Bald Eagle, and the Division would therefore require that remediation activities be initiated outside of the Bald Eagle's nesting period. "Net Benefit," however, could potentially be achieved through a variety of off-site measures, including habitat protection, funding for research and inventory, or other approaches. The establishment of additional artificial nest sites with preferred characteristics several seasons prior to the expected timing of remediation's impact to the Bald Eagle's natural nest site could also help this pair of eagles move to alternative sites. GE did not evaluate the feasibility of this type of holistic 'Net Benefit' plan for the Bald Eagle.

- **THE IMPORTANCE OF REQUIRING GE TO FURTHER EVALUATE COMPLIANCE WITH MESA TO THE MAXIMUM EXTENT PRACTICABLE, EVEN IF THERE WILL BE A SIGNIFICANT IMPACT ON A LOCAL POPULATION.**

Finally, as discussed above, GE's expanded and revised MESA Assessment, in consultation with the Division, needs to revisit its preliminary determinations of the local population of each state-listed species, whether an alternative will significantly impact a local population of an affected species, and whether a Net Benefit can be provided, even if GE's revised determination is that the local population will be significantly impacted. The Division recognizes that there may be instances where a local population will be significantly impacted (e.g., possibly the local population of the Eastern Veined White, located in the area shown in Figure J). Even in such cases, the Division would still request EPA to require GE to determine whether a Net Benefit can be provided to the conservation of the affected state-listed species, rather than broadly waive compliance with MESA as an ARAR. Requiring that a Net Benefit still be provided in such instances is a

means of ensuring the conservation of the affected state-listed species and compliance with MESA to the maximum extent practicable.

The Importance of a Complete and Timely Response to Specific Comment 42

As noted in the introduction to our letter, Specific Comment 42 (as further specified by EPA in its October 30, 2008 letter) directs GE to conduct comprehensive analyses of six (6) different features or habitat areas within the PSA with unique ecological characteristics. GE is required to provide an in-depth evaluation of their proposed processes and methods for the avoidance, minimization and mitigation of impacts to the environment and detailed description and plans for restoration of these impacted areas. In their March 9th response to SC 42, GE acknowledged receiving EPA's October 30, 2008 direction, but stated that it is critical that the in-depth evaluation required by SC 42 include consideration of their ecologically sensitive alternative under development. GE also stated that it did not have sufficient time to complete the SC 42 evaluation by the March 9, 2009 deadline for responding to EPA's comments on the CMS. EPA, in a letter to GE dated April 1, 2009 commenting on the content of GE's upcoming Work Plan for the revised CMS, directed GE to fully respond to SC 42 in an interim deliverable to be submitted in the summer of 2009. GE is required to propose a submittal date for SC 42 in their Work Plan for the revised CMS.

The Department and the Division strongly supported the need and value of the response called for in SC 42. We view EPA's identification of the six ROR floodplain subreaches with representative ecological characteristics as a particularly effective framework for GE concretely demonstrating how it would analyze and implement the range of restoration challenges associated with the ROR remedial alternatives. Moreover, the intent of SC 42 was to ensure that GE completed the above exercise well in advance of GE's a revised CMS, which will serve as the basis for EPA's selection of the ROR remedy. It is even more important from a timing perspective that the above type of ecological feature/habitat area-specific restoration analyses not be deferred until a revised CMS. For these reasons, the Department and the Division strongly concur with EPA's direction that GE submit, as an interim deliverable, a comprehensive response to SC 42 by this summer. The Department and the Division also agree that it critical for GE to incorporate their ecologically sensitive alternative principles and approaches as an integral component of their response to SC 42. We look forward to GE's confirmation in its Work Plan that it will be submitting a comprehensive response to SC 42 as an interim deliverable, and are prepared to work constructively with GE and EPA in our review and comment on this important, upcoming response.

GE's Response to General Comment 10

In General Comment 10, EPA directed GE to provide a detailed description of the restoration process and the methods that may be used to restore habitats affected by the remediation and other construction activities. More specifically, EPA stated that GE's response must, at a minimum, include (1) the process that will be used to identify and document ecological functions and existing conditions in the river, floodplain, and special habitats; (2) the methods that will be used to evaluate options for an alternative to avoid, minimize or mitigate the impacts of the alternative, including a description of the related decision-making process, and taking into account, in particular, the impacts on

state-listed species under MESA; (3) the methods that can be used to restore or replicate ecological functions and services of habitat; and (4) the process by which performance standards shall be established, with stakeholder input, to assess the success of the restoration. EPA also required that GE's evaluation follow EPA's Wetlands Restoration Principles document, MADEP's 2006 Wildlife Habitat Protection Guidelines for Inland Wetlands, and the Society for Ecological Restoration International Guidelines for Developing and Managing Ecological Restoration Projects. Finally, EPA directed GE to use the areas identified in Specific Comment 42 to illustrate the process of how restoration will be accomplished.

GE divided its response consistent with the four major topic areas identified by EPA in GC 10. At the outset, the Department and the Division acknowledge the comprehensive nature of GE's response to GC 10 (close to 100 pages in length), and that this response is intended to incorporate by reference GE's extensive MESA assessment in Appendix B. GE also properly included in its review of the range of existing information, the data, mapping reports from the Division's NHESP depicting the Priority Habitats of MESA state-listed species in the PSA, information regarding NHESP's comprehensive survey of subpopulations of state-listed species within the larger Upper Housatonic River Valley, and the documentation supporting nomination of the Upper Housatonic River as an ACEC.

However, as discussed above, GE's response to GC 10 is missing the companion response to SC 42, which both EPA and the Commonwealth regard as essential to illustrating concretely how restoration would be achieved for a range of representative ecological features and habitats in the ROR reaches. Until GE's response to SC 42 has been completed and then evaluated by EPA, the Commonwealth and the public, GE's restoration analysis for the purposes of the CMS will remain substantially deficient. Indeed, without this level of restoration analysis, the Commonwealth and the public will be unable to definitively evaluate the full scope of impacts associated with each altenative in the CMS.

In terms of assessing the adequacy of GE's response to GC 10, the Department and the Division have two main comments, discussed below. First, we share many of GE's concerns about the long-term impacts of the remedial alternatives on the ROR ecosystem as well as the key constraints associated with fully restoring the range of riverine environments and habitats within ROR. However, we also believe that GE's response does not adequately support and document the basis for its negative conclusions about likelihood of avoiding, minimizing and mitigating impacts, particularly to state-listed species, or of achieving full restoration when impacts cannot be avoided. The Division's detailed critique of the MESA assessment in Appendix B above summarizes our concerns about GE's avoid/minimize/mitigate conclusions regarding state-listed species. In addition, absent a response to SC 42, GE's analyses and related conclusions regarding the likelihood of success of restoration are too conceptual and conclusory in nature.

More specifically, GE's evaluation of the impacts to and restoration of the riverine environment in the PSA follows a template that is used throughout its response to GC 10. To summarize the core components of that evaluation serves to illustrate our overall reaction to GE's response to GC 10.

GE's riverine evaluation appropriately highlights the unique physical features and rich biological communities, including 25 fish species and 15 MESA state-listed species, present in Reaches 5A and 5B. The discussion of the impacts of the sediment alternatives on the riverbanks notes that the upper 64% of both banks of the River within the PSA will be disrupted, affecting the natural geomorphic process that result in the formation of meanders in the River. GE raises legitimate concerns about the potential of this work to eliminate habitat for a number of riparian species that use the banks. Other potential impacts include the alteration of in-stream habitats for fish and aquatic invertebrates, loss of mature, overhanging trees that are the source of the woody debris found in aquatic habitats, and disruption of connectivity between aquatic habitats and upland areas and movement and dispersal corridors for resident and migratory species. In short, the Department and the Division agree that the implementation of the remedial alternatives on the table have the potential to dramatically impact and alter the ecological and biological characteristics of the River on a long term basis.

We also agree generally with GE's identification of the key constraints to restoring the riverine environment, which arise out of the above identified impacts, but also include related concerns such as the slow rate of recolonization of aquatic habitats, and colonization by invasive species. See pp.67-70. There is no question that due to the ecologically rich and diverse characteristics of the ROR, there are numerous challenges to restoring the instream and riverbank features of the riverine habitat to its current condition. Having said that, the Department and the Division also underscore the pressing need for GE to determine more concretely and definitively the extent to which full restoration can be achieved and by what timeframe. It is this critical question of restoration that needs further explication and refinement in the upcoming revised CMS.

Using the riverine evaluation as representative of GE's response to GC 10, the description of the restoration methods (pp.70-72) is too general, nor does it make clear how this summary description takes into account the EPA, MADEP and international restoration guidelines specified in GC 10. The likelihood of success in restoration section (pp.73-74) notes that no precedent exists for a remediation/restoration project similar to the setting for the ROR remedy, which GE accurately describes as a river that "winds for 10 miles in a sinuous manner through a natural, biologically rich, and ecologically sensitive ecosystem." However, the analysis in this section is also summary in nature, and concludes that the changes resulting from the implementation of the sediment alternatives would be so extensive that it is unlikely that the overall riverine habitat could be returned to its current condition "regardless of the restoration methods employed." From the Department and the Division's perspective, it is premature for GE to conclude that full restoration cannot be achieved, given it has not yet responded to SC 42 and in light of the Division's comments on the MESA Assessment in Appendix B.

GE's evaluation of the impacts to and restoration of the impoundment habitat, forested wetlands, shrub and emergent wetlands, and vernal pools are addressed using the same format and a similar level of detail as the riverine environment. The conclusion section (pp. 126-127) briefly summarizes the key themes and outcomes of GE's overall response to GC 10, reiterating that "there is virtually no likelihood that, following implementation of any combination of those alternatives, the overall affected ecosystem

of the PSA could be returned to its current condition and level of function." Again, GE's categorical conclusion is lacking sufficient supporting analysis and documentation.

In summary, the Department and the Division acknowledge the scope and level of effort associated with GE's response to GC 10, but for the reasons stated above, we believe that additional analyses are needed - including a detailed and comprehensive response to SC 42, the refined MESA assessment and incorporation of GE's Ecologically Sensitive Alternative - to provide an expanded and complete assessment of the impacts of the alternatives and the ability to avoid, minimize and mitigate such impacts and to fully restore the affected ROR ecosystem.

In closing, the Department and the Division appreciate another opportunity to comment on GE's CMS, and look forward to working closely with EPA and GE as GE moves forward in the development of an expanded and revised CMS.

Sincerely,

Mary B. Griffin
Commissioner
Department of Fish and Game

Sincerely,

Wayne F. MacCallum
Director
Division of Fisheries and Wildlife

cc: Fisheries and Wildlife Board
Ken Kimmell, EEA
Laurie Burt, Commissioner, DEP

NON-GOVERNMENT GROUPS

To: Mr. Jim Murphy

Subject: Public Comment on GE's Response to EPA's comments on GE's Corrective Measures Study (CMS) for the Housatonic River Site, Rest of River

Mr. Murphy,

Being an active member of the sediment remediation community (member of the SMWG), we read with interest both the original CMS submitted by GE and the EPA's response. I'm pleased to have the opportunity to have some specific comments entered into public record on this project.

Although there are many potential areas that we could comment on, I would like to focus our comments on one particular comment from the EPA on the CMS:

“Provide additional justification for the use of thin-layer capping and MNR in the location selector these techniques in Reaches 5-8 for each of the alternatives. EPA has notified GE that EPA does not consider thin-layer capping to be a permanent means of isolating contaminants (but is a form of MNR).”

At AquaBlok, we've spent ten years and millions of dollars developing alternative capping technologies that provide enhanced isolation of contaminants - through either low permeabilty or reduction of contaminants by in-situ treatment methods. The EPA itself even funded a significant portion of this work, through the successful 'Superfund Innovative Technology Evaluation (SITE)' project. Yet, it appears that neither EPA, GE, or their consultants have recognized the potential for the contribution of these advanced methods to improve performance of the remedy - with a minimum impact on the water way or habitat.

We object to the EPA providing a general characterization of "thin-layer capping" as a form of MNR. The EPA should clarify that this comment is specif to thin-layer sand capping. It is important to point out that thin-layer capping can be designed with materials that arguably provide a level of protectiveness that is greater

than even a dredging alternative - which appears to be the EPA's preferred alternative at this site.

An alternative that has not been proposed to EPA for the site is incorporation of either low permeability materials and/or in-situ treatment materials, such as activated carbon into a thin-layer ‘engineered cap’. It has been documented that, while relatively thin, such a cap will be more erosion resistant than sand and provide a diffusion/advection control attribute that is much more effective than feet of sand layer. This makes it possible to isolate, encapsulated and/or sequester residual contaminants in a non-bioavailable form – in a similar manner to those contaminants that are already sufficiently buried by new clean layers of sediment so to not pose a risk to the habitat. It is also important to recognize that this approach is far less destructive to the existing habitat and by improving performance of the protective layer, without increasing its thickness – there is less impact on the overall hydrology (i.e. it has been shown in several studies that AquaBlok clay-based materials form a natural substrate for rapid restoration and recovery).

In summary, we strongly believe that neither the EPA or GE have served the public's interest until and unless serious consideration of alternative available technologies are considered for applicable sections of the remediation project. It is also be noteworthy to mention that we are currently in discussions with the primary engineering firms for several other major remediation projects that also are deling with PCB contaminantion - as a strategy to reduce dredge volumes by using AquaBlok as a base layer in the post-dredging backfill
- the objective being to minimize the impacts of dredging and pro-actively address the known issues of generated dredging residual contaminant.

Thank You for the opportunity to provide these comments,

John A. Collins

COO & General Manager

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B.E.A.T. Working with you to protect the environment of Berkshire County and beyond

May 11, 2009

Jim Murphy, EPA Community involvement Coordinator
Susan Svirsky, Rest of River Project Manager
United States Environmental Protection Agency
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

RE: General Electric Company's Response to EPA's comments on General Electric Company's Corrective Measures Study for the Housatonic River Site, Rest of River

Please accept these comments from the Berkshire Environmental Action Team, Inc. (BEAT) on General Electric Company's Response to EPA's comments on General Electric Company's Corrective Measures Study for the Housatonic River Site, Rest of River (ROR).

BEAT feels very strongly that the first issue that must be dealt with is source control. We are pleased that the flows out of both Unkamet Brook and Silver lake are being measured, but measuring will just give us a better indication of how much contamination is continuing to flow into the Housatonic River upstream of the remediation that has been done thus far. We do understand that far less contamination is flowing into the river than there was 10 years ago. However, PCBs are persistent. We feel strongly that the known sources of PCBs entering the river should be stopped as quickly as possible.

BEAT is pleased that everyone seems to agree that an ecologically sensitive solution is called for – now we just need to agree on what an ecologically sensitive solution means. BEAT believes an ecologially sensitive solution is one that does not treat the river in a uniform a manner, but instead looks at different areas in different ways given the ecological processes each area supports. This approach should be an iterative process employing “adaptive management” and requiring public input at each stage of the remediation because the people who live by or use an area have valuable insights to share.

It seems logical to start at the top (most upstream part) of the rest of the river, however a suggestion was made to possibly use Woods Pond as a temporary catch basin. BEAT believes this suggestion should be carefully evaluated. Perhaps suction dredging behind the dam at Woods Pond before any other remediation is attempted would increase the ability of this area to catch more PCB contaminated sediment while eliminating the threat of all the current contamination behind the dam from moving further downstream.

Each section chosen for remediation should use the best available methods and technologies for the given situation. The most promising alternative technologies could be carefully tested, monitored, and evaluated. Perhaps in some areas nothing would be done at this point in belief that in the near future an alternative technology would produce a much more desirable outcome and the amount of contamination that would move from the location in the meantime would be acceptable – especially if it could be contained or if it were captured further downstream.

While these treatments are being employed, the downstream effects should be carefully monitored, because even small changes upstream can have profound impacts downstream. Any restoration should not just be to make the river look like it did before, but to restore the ecological processes that were there before. That includes leaving the river in a condition that it can do what rivers do – meander back and forth in the floodplain.

After the remediation in a given stretch of river, the process and outcomes should be carefully evaluated and changes made based on those lessons learned. BEAT believes that the remediation in the ROR should advance the science of river remediation.

We realize that this approach may not give GE the closure that the company wants, but the company that did the polluting should bear the consequences, not the citizens of all the communities downstream. To ease the uncertainty, a trust fund could be set up to fund future cleanup efforts.

If soil and sediment is to be removed, BEAT believes that it should be treated to break down the PCBs thoroughly enough to be able to reuse the soil. In no case should any of the soil or sediment be stored in a landfill within the floodplain. If it is absolutely necessary to store soil and sediment, any landfill should be located in the upland, be lined and capped and be only a temporary solution until permanent destruction of the PCB contamination becomes possible.

Thank you for considering our comments.

Sincerely,

Jane Winn
Executive Director

BEAT , 27 Highland Ave., Pittsfield, MA 01201 , 413-230-7321 , jane@thebeatnews.org

May 11, 2009

Ms. Susan Svirsky
EPA Rest of River Project Manager
U.S. Environmental Protection Agency, Region 1
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Re: Comments on General Electric's March 6, 2009 Response to EPA's Interim Comments on the
Housatonic River – Rest of River, Corrective Measures Study Report, March 2008

Dear Ms. Svirsky:

BioGenesis Enterprises, Inc. has reviewed General Electric's (GE's) March 6, 2009 Response to EPA's Interim Comments on the Corrective Measures Study Report (CMS Report) submitted by General Electric for the Housatonic River, Rest of River site. As we have stated before, the data provided in our Bench-Scale Treatability Study Report (Appendix A to the CMS) and the additional analysis of the data provided in our May 7, 2008 comment letter (summarized in the Treatability Study Supplemental Report attached), clearly indicates that the BioGenesis[SM] Soil/Sediment Washing Technology can meet the stated goal of less than 2 mg/kg concentration of PCBs in the treated material. We offer the following comments on the data analysis included in Appendix C of GE's response to the EPA's Interim Comments.

1. GE indicates, "Overall, multiple treatment cycles appear to reduce concentrations to plateau levels, below which further reduction appears to be incrementally smaller or not possible…" and that "… multiple treatment cycles will not result in significant further reductions" in PCB concentrations (page C-5). As discussed in our May 11, 2008 comment letter our analysis indicates that multiple treatment cycles will continue to achieve additional reductions in PCB concentrations (see attached supplemental report). GE has oversimplified the data analysis by evaluating only one component of the treated material (hydrocyclone output). Our analysis indicated that the largest amount of PCB reduction occurs during the initial treatment cycle where the loosely bound organic material is easily removed, and subsequent treatment cycles achieve reductions in PCB concentrations at a lesser, but consistent rate.

2. In discussing the issues with the solids balance, GE states, "It is reasonable to assume that the equipment limitations resulted in a higher proportion of loss of the finer grained material suspended in aqueous solution rather than the coarser grained material…" (page C-7). GE uses this assumption to further the argument that multiple treatment cycles will not result in additional reductions. In fact the loss of solids was primarily due to heavy, coarser grained solids settling in the hoses and the bottom of tanks, not from material suspended in aqueous solution.

In comparing the mass of dry solids from each output from treatment cycle to treatment cycle, the amount of solids lost during treatment cycle is similar across all the solids outputs, if not slightly greater for the coarser material (hydrocyclone solids). The attached tables summarize these results.

As GE asserts in the response to comments, the finer grained fractions of the sediment are expected to have higher concentrations of PCBs, so the similar loss of solids from all the fractions would indicate the data is not biased towards the higher concentration fraction, and that the loss of solids may be unimportant. Further testing could clarify this issue.

3. In Section 4 of Appendix C to GE's response to EPA's interim comments (page C-11) GE references two large PCB remediation projects that have, in the initial planning steps, ruled out the use of the BioGenesis process based on the lack of experience with sediment of similar concentrations. BioGenesis has not performed bench or pilot studies on the sediment from either of these projects while we have performed bench studies on the sediment and floodplain soils from the Housatonic River, and the data from the bench-scale studies from the Housatonic river show that the BioGenesis^{SM} Soil/Sediment Washing Technology can meet the stated goal of less than 2 mg/kg concentration of PCBs in the treated material. Furthermore, the core equipment of the BioGenesis^{SM} Soil/Sediment Washing Technology has been demonstrated at full-scale in several projects over the past several years such as the Venice, Italy project, and the NJ Demonstration project.

BioGenesis remains committed to the safe environmentally responsible treatment of environmental problems, and we look forward to working with your office and with GE personnel to realize this potential.

Sincerely,

Charles L. Wilde
Executive Vice President

Enclosure

Table 1 Solids Data SED A

SED A (S1)	First Run (R1)			Second Run (R2)			Third Run (R3)			Average Total Loss of solid fraction
	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	
Amount of Dry Solids Recovered after the First Treatment Cycle										
greater than 6.35 mm	2.4	-	-	2.8	-	-	4.5	-	-	-
425 microns to 6.35 mm	33.8	-	-	29.6	-	-	31.9	-	-	-
75 to 425 microns	4.0	-	-	4.8	-	-	6.1	-	-	-
hydrocyclone solids	1.0	-	-	1.4	-	-	1.3	-	-	-
centrifuge solids	1.6	-	-	1.8	-	-	1.9	-	-	-
Amount of Dry Solids Recovered after the Second Treatment Cycle										
greater than 6.35 mm	2.4	0.0%	-	2.8	0.0%	-	4.5	0.0%	-	-
425 microns to 6.35 mm	33.8	0.0%	-	29.6	0.0%	-	31.9	0.0%	-	-
75 to 425 microns	2.2	-45.0%	-	3.6	-25.0%	-	4.0	-34.4%	-	-
hydrocyclone solids	0.3	-70.0%	-	1.0	-28.6%	-	0.9	-30.8%	-	-
centrifuge solids	1.1	-31.3%	-	0.6	-66.7%	-	1.5	-21.1%	-	-
Amount of Dry Solids Recovered after the Third Treatment Cycle										
greater than 6.35 mm	2.4	0.0%	0.0%	2.8	0.0%	0.0%	4.5	0.0%	0.0%	0.0%
425 microns to 6.35 mm	33.8	0.0%	0.0%	29.6	0.0%	0.0%	31.9	0.0%	0.0%	0.0%
75 to 425 microns	0.9	-59.1%	-77.5%	2.1	-41.7%	-56.3%	2.6	-35.0%	-57.4%	-63.7%
hydrocyclone solids	0.3	0.0%	-70.0%	0.9	-10.0%	-35.7%	0.7	-22.2%	-46.2%	-50.6%
centrifuge solids	0.5	-54.5%	-68.8%	0.8	33.3%	-55.6%	1	-33.3%	-47.4%	-57.2%

Table 2 Solids Data SED B

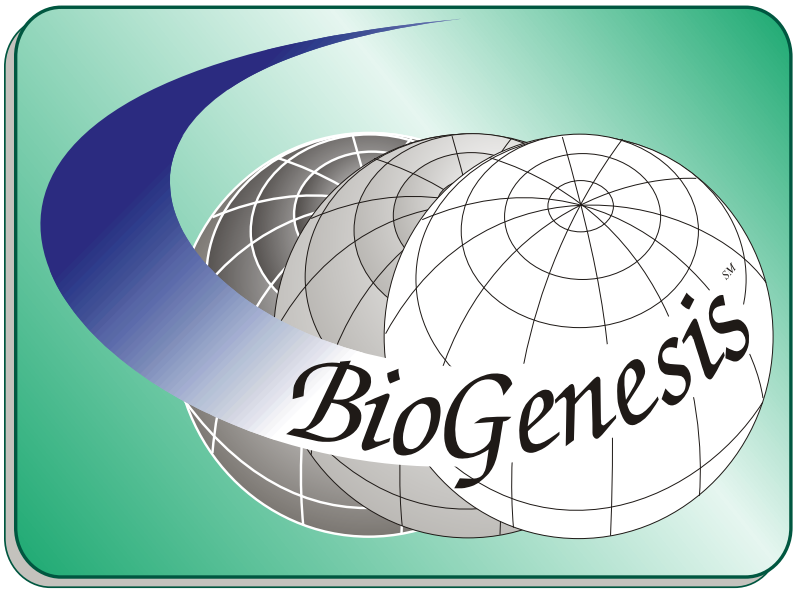
SED B (S2)	First Run (R1)			Second Run (R2)			Third Run (R3)			Average Total Loss of solid fraction
	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	
Amount of Dry Solids Recovered after the First Treatment Cycle										
hydrocyclone solids	2.1	-	-	1.8	-	-	2.7	-	-	-
centrifuge solids	4.7	-	-	5.4	-	-	4.0	-	-	-
Amount of Dry Solids Recovered after the Second Treatment Cycle										
hydrocyclone solids	1.0	-52.4%	-	1.0	-44.4%	-	2.0	-25.9%	-	-40.92%
centrifuge solids	2.7	-42.6%	-	2.6	-51.9%	-	2.6	-35.0%	-	-43.14%
Amount of Dry Solids Recovered after the Third Treatment Cycle										
hydrocyclone solids	0.4	-60.0%	-81.0%	0.5	-50.0%	-72.2%	0.9	-55.0%	-66.7%	-73.28%
centrifuge solids	1.9	-29.6%	-59.6%	2.0	-23.1%	-63.0%	2.0	-23.1%	-50.0%	-57.51%

Table 3 Solids Data SO A

SO A (S3)	First Run (R1)			Second Run (R2)			Third Run (R3)			Average Total Loss of solid fraction
	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	Mass of dry Solids Recovered (kg)	Loss of solids fraction per cycle	Total Loss of solid fraction	
Amount of Dry Solids Recovered after the First Treatment Cycle										
hydrocyclone solids	5.7	-	-	10.5	-	-	9.5	-	-	-
centrifuge solids	3.8	-	-	4.9	-	-	3.7	-	-	-
Amount of Dry Solids Recovered after the Second Treatment Cycle										
hydrocyclone solids	3.6	-36.8%	-	7.4	-29.5%	-	6.8	-28.4%	-	-31.60%
centrifuge solids	2.5	-34.2%	-	3.7	-24.5%	-	2.1	-43.2%	-	-33.98%
Amount of Dry Solids Recovered after the Third Treatment Cycle										
hydrocyclone solids	2.6	-27.8%	-54.4%	6.2	-16.2%	-41.0%	5.8	-14.7%	-38.9%	-44.76%
centrifuge solids	1.6	-36.0%	-57.9%	3.2	-13.5%	-34.7%	2.0	-4.8%	-45.9%	-46.18%

BIOGENESIS℠ SEDIMENT WASHING TECHNOLOGY

Bench-Scale Treatability Study Report
Housatonic River, Rest-of-River Site



SUPPLEMENT TO THE FINAL REPORT OF 13 MARCH 2008

26 June 2008

BioGenesis Enterprises, Inc.
7420 Alban Station Blvd. · Suite B-208 · Springfield, Virginia 22150 USA · TEL (703) 913-9700 · FAX (703) 913-9704

ABSTRACT

BioGenesis℠ Sediment Washing is an innovative, emerging technology that removes organic and inorganic contaminants such as PCBs, PAHs, organochlorines (pesticides, herbicides), and heavy metals from sediment particles both larger and smaller than 75 micrometers (200 mesh) in size. It overcomes the limitations of conventional washing methods that have difficulty in decontaminating fine silt and clay mixtures.

This document supplements the Final Report of Bench-Scale Treatability Testing, Housatonic River – Rest-of-River Site dated 13 March 2008, submitted to ARCADIS, Syracuse, NY. It should be read in conjunction with the full report.

The Final Report documented results achieved using three BioGenesis treatment cycles on soil and sediments with PCB contamination from 45 to 170 mg/kg. However the costs in the Final Report consider only one treatment cycle to bring treated material below the TSCA/Non-TSCA criteria of 50 mg/kg. This Supplement to the Final Report extends the findings using multiple treatment cycles to bring the treated material to a reuse goal of 2 mg/kg, and documents the expected costs for the multiple cycle treatment.

The major conclusions are that residential use standards of 2 mg/kg can be attained with multiple treatment cycles, and that costs for the additional treatment do not increase proportionate to the number of treatment cycles, but rather are related mainly to the capital equipment needed for the additional cycles.

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Introduction

BioGenesis Enterprises, Inc. (BioGenesis) develops, manufactures, and provides products and services for industrial cleaning and remediation. The advanced technology behind all BioGenesis' products reflects our belief that today's solutions can do more than be marginally acceptable; they can also be highly effective and have a positive environmental effect. The BioGenesis[SM] Soil/Sediment Washing Technology, patented in December 2001, is designed to decontaminate both coarse-grained (sand- and gravel-sized) and fine-grained (silt- and clay-sized) particles, by isolating individual particles and removing contaminants and naturally occurring organic material adsorbed to the particles. This is achieved through a combination of physical and chemical forces. The result of the BioGenesis process is a decontaminated soil/sediment that can be reused in the excavation or used as a raw material in the production of topsoil or other construction-grade products.

BioGenesis performed a treatability study using the BioGenesis[SM] Soil/Sediment Washing Technology on sediment and floodplain soil from the Housatonic River – Rest-of-River site for General Electric in the fall of 2007. The results of the treatability study are included in the Bench-Scale Treatability Study Report dated March 13, 2008 submitted to Arcadis and GE, and subsequently to EPA Region 1 by GE.

I. BioGenesis Treatment Can Meet Reuse Standards

The study data reported in the March 13th report show that multiple treatment cycles continued to achieve reductions in PCB concentrations. This indicates the BioGenesis[SM] Soil/Sediment Washing Technology can decontaminate sediment and floodplain soils from the Housatonic River – Rest-of-River site to meet the Massachusetts reuse standard of 2 mg/kg.

For the treatability study, BioGenesis was provided PCB-contaminated material from three locations in the Rest-of-River site. The three locations were selected by Arcadis (GE's consultant) to be representative of:

a) the range of physical characteristics typical of soil and sediment in the Rest-of-River site, and
b) the upper limit of PCB concentrations in the soil and sediment in the Rest-of-River site.

The goals of the treatability study included an evaluation of the extent that the BioGenesis[SM] Soil/Sediment Washing Technology could substantially reduce PCB concentrations in the soil and sediment from the Rest-of-River site. Data were collected to evaluate this goal. However, during the preparation of the final report, the focus of the work was changed by the client. In the March 13th report, the data interpretation and costing were focused on the reduction of PCB concentrations to below 50 mg/kg (or parts per million, ppm) to reduce disposal cost by not requiring disposal at a Toxic Substance Control Act (TSCA) permitted landfill.

During the treatability study, three validation test runs were performed on each of the three materials for a total of nine validation test runs. Each of the nine validation test runs consisted of three treatment cycles to evaluate the effect of multiple treatment cycles on the PCB concentrations. The second and third treatment cycles were performed by collecting the treated soil/sediment after the first or second treatment cycles, recombining the treated material with water, and processing it through the equipment again. Samples were collected after each of the treatment cycles as described in the Treatability Study Report. Presented in Figure 1 is a graph of the weighted PCB concentrations in the treated soil/sediment for each of the nine validation test runs after each treatment cycle.

A review of Figure 1 shows decreasing concentrations in the treated soil/sediment with each subsequent treatment cycle as would be expected. In order to project the required number of treatment cycles to reach the onsite reuse criteria, or Massachusetts residential criteria, the data are plotted on a log-normal graph and a best fit line is calculated for the data from the three validation test runs on each of the three materials.

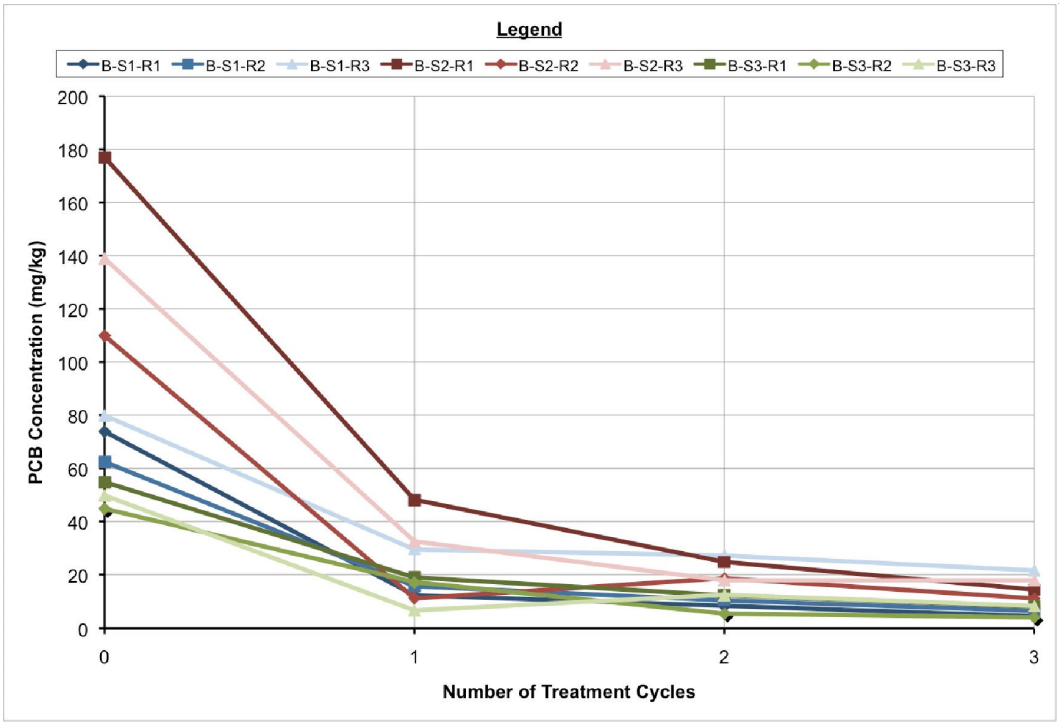

Figure 1. Bench-Scale Treatability Study Results

Presented in Figure 2 is a lognormal plot of the data for each of the three validation test runs

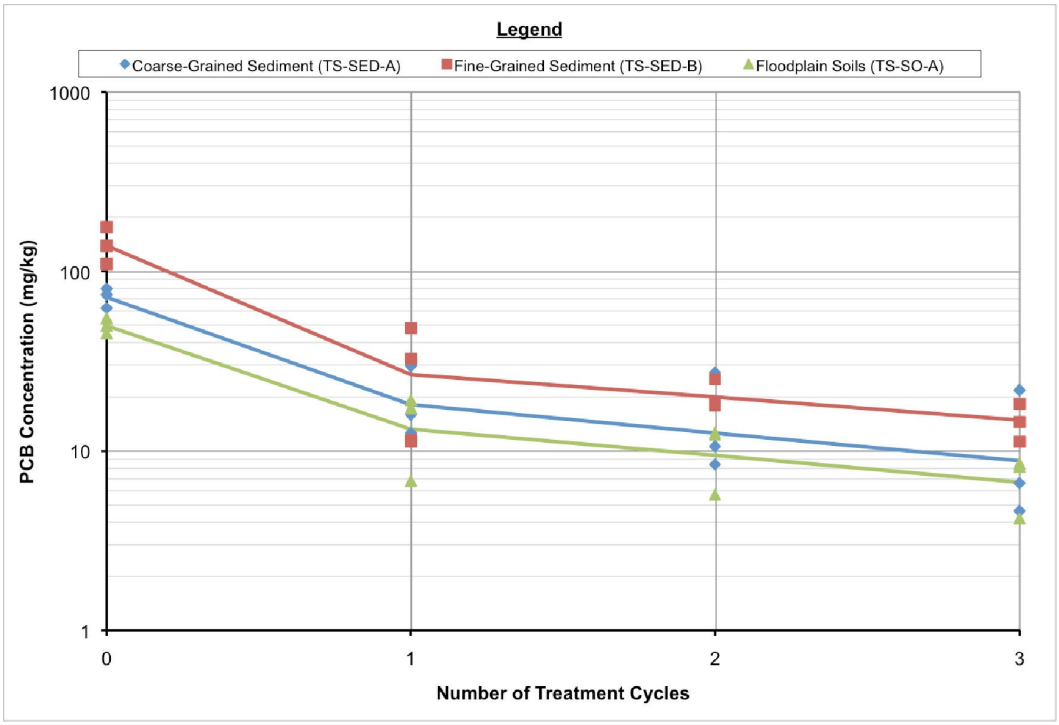

Figure 2. Lognormal Plot of Bench-Scale Treatability Study Results

with the calculated best-fit curve. A few significant observations can be made from reviewing Figure 2. First, the largest amount of PCB reduction occurs during the initial treatment cycle.

This is expected since the loosely bound organic material is easily removed in the initial treatment cycle and PCBs have an affinity toward organic materials. A significant portion of the PCB contamination would be removed with the loosely bound organic material. The slope of the curve represents the amount of PCB removal in the initial treatment cycle, which, considering the three disparate soil/sediment matrices and different starting concentrations, is relatively consistent.

Second, subsequent treatment cycles achieve reductions in PCB concentrations at a lesser, but consistent rate. The best-fit curve is a straight line on a lognormal graph, which indicates a logarithmic reduction in concentrations.

Third, a comparison of the slopes of the best fit curves for all three of the materials for the second and third treatment cycles shows consistent reductions for each material for these treatment cycles. This indicates that the removal of PCBs from the soil/sediment of the Rest-of-River site using the BioGenesis^{SM} Soil/Sediment Washing Technology is unaffected by the soil/sediment matrix and is unaffected by the initial concentration.

All of these observations indicate that the data collected during the bench-scale treatability study can be used to estimate the number of treatment cycles needed to decontaminate the soil/sediment from the Rest-of-River site to meet the reuse criteria at different starting concentrations. The following equation has been developed to predict the performance of the BioGenesis^{SM} Soil/Sediment Washing Technology on the PCB concentrations in the soil/sediment from the Rest-of-River site:

$$PCB_T = 0.2322 * PCB_I * e^{-0.33(n-1)}$$

where:

PCB_T = PCB concentration (mg/kg) in treated soil/sediment

PCB_I = PCB concentration (mg/kg) in untreated soil/sediment

n = number of treatment cycles

Based on the data collected during the treatability study, the BioGenesis[SM] Soil/Sediment Washing Technology can achieve reuse criteria through multiple treatment cycles (see Figure 3), and the amount of treatment can be estimated using the equation above.

II. Lower Costs Are Achieved by Meeting Reuse Standards

The costs for site remediation can be substantially reduced when considering Treatment to meet Reuse criteria. Such costs include the cost for Removal, Treatment, Transportation & Disposal, and Site Restoration. The costs for Treatment are a combination of capital costs to build the treatment facility and daily operations costs. A treatment facility that incorporates multiple treatment cycles in order to achieve higher reductions in PCB concentrations would require a higher capital cost upfront, however the increase in operating costs would be relatively small. Since this material would not require disposal, the Transportation & Disposal costs would be eliminated. Under a scenario of reuse, the treated soil/sediment could be placed back into the excavation, thus replacing the excavated material with cleaned native material and substantially reducing Site Restoration costs. Alternatively, the treated soil/sediment could be used as fill material or as topsoil for local construction projects, thus offsetting Site Restoration costs. To provide an estimated range of costs for treatment of the soil/sediment from the Rest-of-River site to meet the reuse criteria, we have used the average PCB concentrations in the soil/sediment proposed to be removed under both the minimum and maximum scenarios.

Minimum Project	:	221,042 cy of soil/sediment
		30.2 mg/kg PCBs (average)
Maximum Project:		3,385,018 cy of soil/sediment
		13.2 mg/kg PCBs (average)

Plotted in Figure 3 is a graph of the expected treatment curve for the minimum and maximum removal projects using the BioGenesis soil/sediment treatment curve developed from the treatability study data. For the minimum removal project, a treatment facility with 5 treatment cycles would be able to decontaminate the average soil/sediment from the Rest-of-River site to meet reuse criteria. For the maximum removal project, a treatment facility with 3 treatment cycles would be able to decontaminate the average soil/sediment from the Rest-of-River site to meet reuse criteria. Using the data from Figure 3, the capital costs for the treatment facility for

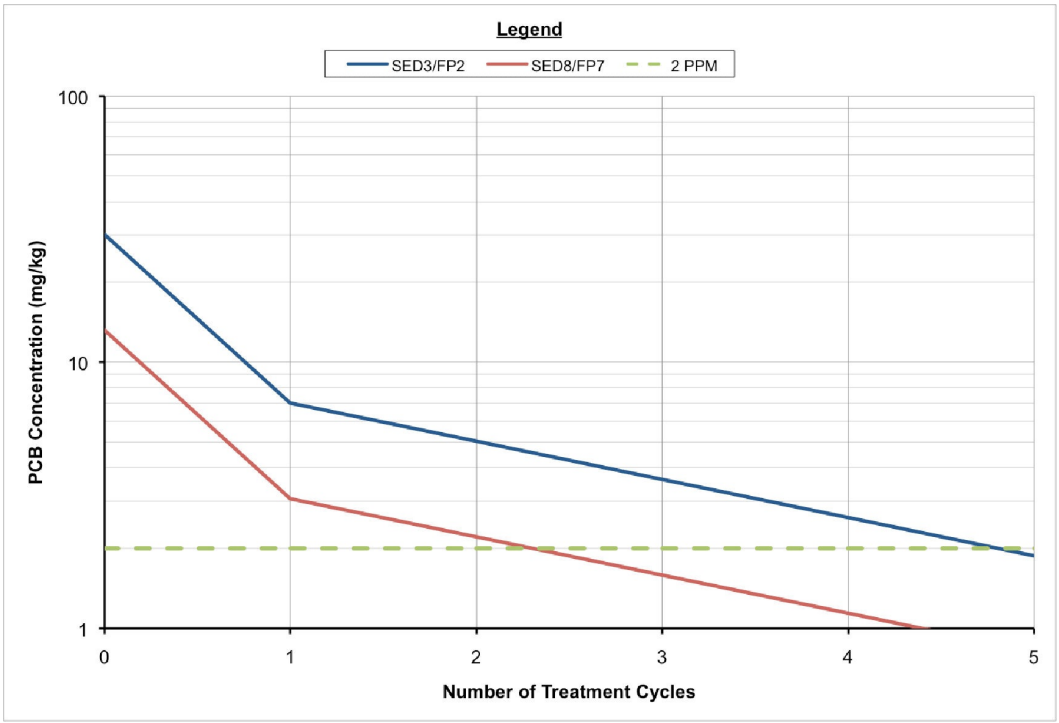

Figure 3. Required Treatment Cycles to Meet Reuse Criteria

the minimum and maximum removal projects have been estimated. Presented in Tables 1 and 2 are the estimated capital costs for a BioGenesis^{SM} Soil/Sediment Washing Technology treatment facility for both the minimum and maximum removal projects.

Table 1. Estimated Capital Cost Breakdown - Minimum Project- 221,042 cy				
Cost Component		**Quantity**	**Unit Cost**	**Total Cost ($)**
Upfront Storage				
	Storage Cells (precast concrete)	150	$1,000	$150,000
Screening Facilities				
	Screening Equipment	1	$110,000	$110,000
	Transfer Pumps	2	$9,000	$18,000
	Attrition Scrubbing	2	$64,000	$128,000
	Aeration/Flotation Unit	1	$90,000	$90,000
Preprocessing Facilities				
	Mix Tanks	1	$24,000	$24,000
	Mixers	2	$15,000	$30,000
	Preprocessors (1skid w/1+1)	1	$68,000	$68,000
	Blaster Pump (350 Hp)	1	$94,000	$94,000
Prewash Cyclone Facilities				
	Mix Tanks	1	$24,000	$24,000
	Mixers	2	$15,000	$30,000
	Feed Pump	1	$9,000	$9,000
	Cyclone/Shaker Screen	1	$75,000	$75,000
Preprocessing Facilities				
	Mix Tanks	5	$24,000	$120,000
	Mixers	10	$15,000	$150,000
	Preprocessors (1skid w/1+1)	5	$68,000	$340,000
	Blaster Pump (350 Hp)	5	$94,000	$470,000
Collision Facilities				
	Surge Tank	5	$24,000	$120,000
	Mixers	10	$15,000	$150,000
	Collision Chamber	5	$410,000	$2,050,000
	Blaster Pump (350 Hp)	5	$94,000	$470,000
Cav/Ox Facilities				
	Mix Tank	5	$24,000	$120,000
	Mixers	10	$15,000	$150,000
	Cav/Ox Units	20	$61,000	$1,220,000
Liquid/Solid Separation				
	Hydrocyclone unit (tanks, pumps, screeners, mixers)	5	$190,000	$950,000
	Mix Tank	5	$24,000	$120,000
	Mixers	10	$15,000	$150,000
	Centrifuges	5	$340,000	$1,700,000
Wastewater Treatment				
	Centrifuges	1	$340,000	$340,000
	Tank	1	$24,000	$24,000
	Mixers	2	$15,000	$30,000
	Clarifier Feed Pumps	2	$8,000	$16,000
	Solids Contact Clarifier	1	$75,000	$75,000
	Sludge Blowdown Pumps	1	$11,000	$11,000

Table 1. Estimated Capital Cost Breakdown - Minimum Project- 221,042 cy				
Cost Component		**Quantity**	**Unit Cost**	**Total Cost ($)**
	Thickening Tank w/Rake	1	$38,000	$38,000
	Chemical Modifier Feed Tank	1	$2,000	$2,000
	Chemical Feed Pump	1	$1,000	$1,000
	Press Feed Pumps	1	$11,000	$11,000
	Filter Press	1	$375,000	$375,000
	Filtrate Tank	1	$2,000	$2,000
	Filtrate Return Pumps	1	$2,000	$2,000
	Clarifier Overflow Tank	1	$1,000	$1,000
	Mixers	2	$4,000	$8,000
	Pressure Filters	1	$90,000	$90,000
	Filter Feed pumps	2	$9,000	$18,000
	Filter Backwash Pumps	1	$8,000	$8,000
	Effluent Pumps	2	$8,000	$16,000
Chemical Feed Systems				
	Surfactant Tank	1	$3,000	$3,000
	Mixer	1	$2,000	$2,000
	Surfactant Feed Pumps	10	$1,000	$10,000
	Defoamer Feed Pumps	10	$1,000	$10,000
	Peroxide Storage Tank	1	$7,000	$7,000
	Peroxide Feed Pumps	20	$1,000	$20,000
	Polyblend Unit	1	$6,000	$6,000
Treated Sediment Storage				
	Storage Cells (precast concrete)	150	$1,000	$150,000
	Transfer Conveyor to Storage	1	$35,000	$35,000
	Stacker Conveyor (storage area)	1	$25,000	$25,000
Plant Air Compressor		1	$20,000	$20,000
	Equipment Capital Cost			**$10,486,000**
Engineering and Installation Costs				
	Engineering/Procurement	15%		$1,572,900
	Equipment Installation	20%		$2,097,200
	Mechanical	20%		$2,097,200
	Electrical and Instrumentation	20%		$2,097,200
Subtotal Equipment and Installation Cost				**$18,350,500**
	Profit	20%		$3,670,100
	Contingency	25%		$4,587,625
	Total Capital Cost			$26,608,225
Note: Capital costs include equipment for 5 treatment cycles.				

Table 2. Estimated Capital Cost Breakdown – Maximum Project -3,385,018 cy				
Cost Component		**Quantity**	**Unit Cost**	**Total Cost ($)**
Upfront Storage				
	Storage Cells (precast concrete)	150	$1,000	$150,000
Screening Facilities				
	Screening Equipment	1	$150,000	$150,000
	Transfer Pumps	2	$12,000	$24,000
	Attrition Scrubbing	2	$85,000	$170,000
	Aeration/Flotation Unit	1	$120,000	$120,000
Preprocessing Facilities				
	Mix Tanks	1	$32,000	$32,000
	Mixers	2	$19,400	$38,800
	Preprocessors (1skid w/1+1)	1	$91,000	$91,000
	Blaster Pump (350 Hp)	1	$125,000	$125,000
Prewash Cyclone Facilities				
	Mix Tanks	1	$32,000	$32,000
	Mixers	2	$19,400	$38,800
	Feed Pump	1	$12,000	$12,000
	Cyclone/Shaker Screen	1	$100,000	$100,000
Preprocessing Facilities				
	Mix Tanks	3	$32,000	$96,000
	Mixers	6	$19,400	$116,400
	Preprocessors (1skid w/1+1)	3	$91,000	$273,000
	Blaster Pump (350 Hp)	3	$125,000	$375,000
Collision Facilities				
	Surge Tank	3	$32,000	$96,000
	Mixers	6	$19,400	$116,400
	Collision Chamber	3	$540,000	$1,620,000
	Blaster Pump (350 Hp)	3	$125,000	$375,000
Cav/Ox Facilities				
	Mix Tank	3	$32,000	$96,000
	Mixers	6	$19,400	$116,400
	Cav/Ox Units	12	$81,000	$972,000
Liquid/Solid Separation				
	Hydrocyclone unit (tanks, pumps, screeners, mixers)	3	$250,000	$750,000
	Mix Tank	3	$32,000	$96,000
	Mixers	6	$19,400	$116,400
	Centrifuges	3	$450,000	$1,350,000
Wastewater Treatment				
	Centrifuges	1	$450,000	$450,000
	Tank	1	$32,000	$32,000
	Mixers	2	$19,400	$38,800
	Clarifier Feed Pumps	2	$10,000	$20,000
	Solids Contact Clarifier	1	$100,000	$100,000
	Sludge Blowdown Pumps	1	$15,000	$15,000

Table 2. Estimated Capital Cost Breakdown – Maximum Project -3,385,018 cy				
Cost Component		**Quantity**	**Unit Cost**	**Total Cost ($)**
	Thickening Tank w/Rake	1	$50,000	$50,000
	Chemical Modifier Feed Tank	1	$3,000	$3,000
	Chemical Feed Pump	1	$1,500	$1,500
	Press Feed Pumps	1	$15,000	$15,000
	Filter Press	1	$500,000	$500,000
	Filtrate Tank	1	$3,000	$3,000
	Filtrate Return Pumps	1	$3,000	$3,000
	Clarifier Overflow Tank	1	$1,000	$1,000
	Mixers	2	$5,000	$10,000
	Pressure Filters	1	$125,000	$125,000
	Filter Feed pumps	2		$24,000
	Filter Backwash Pumps	1	$10,000	$10,000
	Effluent Pumps	2	$10,000	$20,000
Chemical Feed Systems				
	Surfactant Tank	1	$4,500	$4,500
	Mixer	1	$2,500	$2,500
	Surfactant Feed Pumps	6	$1,560	$9,360
	Defoamer Feed Pumps	6	$1,560	$9,360
	Peroxide Storage Tank	1	$9,000	$9,000
	Peroxide Feed Pumps	12	$1,560	$18,720
	Polyblend Unit	1	$8,000	$8,000
Treated Sediment Storage				
	Storage Cells (precast concrete)	150	$1,000	$150,000
	Transfer Conveyor to Storage	1	$35,000	$35,000
	Stacker Conveyor (storage area)	1	$25,000	$25,000
Plant Air Compressor		1	$30,000	$30,000
	Equipment Capital Cost			**$9,370,940**
Engineering and Installation Costs				
	Engineering/Procurement	15%		$1,405,641
	Equipment Installation	20%		$1,874,188
	Mechanical	20%		$1,874,188
	Electrical and Instrumentation	20%		$1,874,188
Subtotal Equipment and Installation Costs				**$16,399,145**
	Profit	20%		$3,279,829
	Contingency	25%		$4,099,786
	Total Capital Cost			**$23,778,760**

Note: Capital costs include equipment for 3 treatment cycles.

The total operations costs for the BioGenesis[SM] Soil/Sediment Washing Technology treatment alternative with beneficial reuse are provided in Table 3 for the minimum and maximum removal projects.

Table 3. Operations Cost Breakdown		
	Minimum Project 221,042 cy	**Maximum Project** 3,385,018 cy
Removal Volumes		
Coarse-grained Sediment (SED-A)	200,401 cy	879,601 cy
TSCA Material	*45,600 cy*	*294,000 cy*
Non-TSCA Material	*154,801 cy*	*585,601 cy*
Fine-grained Sediment (SED-B)	-	1,822,608 cy
TSCA Material	*-*	*346,800 cy*
Non-TSCA Material	*-*	*1,475,808 cy*
Floodplain Soils (SO-A)	20,641 cy	682,809 cy
TSCA Material	*5,542 cy*	*130,952 cy*
Non-TSCA Material	*15,099 cy*	*551,857 cy*
Total	**221,042 cy**	**3,385,018 cy**
Operations Schedule		
Duration (years)	8.1 yrs	51.5 yrs
Total Months	72.9 months	404.1 months
Total Operating Hours	11,874 hrs	116,904 hrs
Plant Labor Costs	$5,380,406	$61,027,417
Utility Costs		
Power Costs	$6,277,789	$50,521,621
Water Costs	$190,440	$3,319,078
Wastewater Costs	-	-
Waste Disposal Costs		
Oversized Debris T&D	$488,746	$4,698,641
WWTP TSCA Sludge T&D	$1,950,369	$33,066,681
WWTP Non TSCA T&D	$2,661,901	$62,065,283
Chemical Costs	$5,156,963	$74,075,130
Overhead Costs	$8,919,120	$48,574,224
Subtotal Operating Costs	**$31,025,734**	**$337,348,076**
Profit	$6,205,147	$67,469,615
Contingency	$7,756,434	$84,337,019
Total Operating Costs	**$44,987,314**	**$489,154,711**

Notes to Table 3:

1. Power costs increased for additional equipment.
2. Assumed treated water was recycled into second, third, etc… treatment cycles.
3. Increased WWTP sludge T&D costs for multiple treatment cycles.
4. Washing chemicals only used in initial treatment cycle.
5. Overhead costs increased to add additional equipment maintenance costs.
6. The operating costs include five treatment cycles for the minimum removal project and three treatment cycles for the maximum removal project based on the estimated average PCB concentrations. As demonstrated in the treatability study, concentrations above the average can be treated to meet the reuse criteria with additional treatment cycles. The contingency covers costs for additional treatment of soil/sediment above the average concentration. Once the remedial quantity and range of concentrations in the soil/sediment to be treated is determined, provisions will be made in the design phase to cost effectively decontaminate all the soil/sediment to meet the reuse criteria.

III. Evaluation of the BioGenesis Soil/Sediment Washing Technology

The Final Report (March 2008) documented testing results on three disparate soil/sediment matrixes—coarse grained sediments, fine grained sediments, and floodplain soils contaminated with PCBs. Initial contamination levels ranged from 45 to 177 mg/kg. The testing documented successive reductions in three treatment cycles as shown in this Supplement in Figures 1 and 2. Extension of the testing results to five treatment cycles as shown in Figure 3 illustrates that residential soil levels of 2 mg/kg can be achieved that make the treated material suitable for beneficial use as a raw material for topsoil, construction fill, or other beneficial uses that have an economic value. Residual PCB levels in any beneficial use product would be lower than the reuse level of 2 mg/kg when the treated material was a component of a blended beneficial use product.

The cost analysis in the Final Report addressed only one treatment cycle with the goal of reducing PCB levels below the 50 mg/kg criteria requiring disposal in a TSCA permitted landfill. The cost analysis in this Supplement is based on three treatment cycles for the maximum project and 5 treatment cycles for the minimum project. The difference in number of cycles is due to the differences in average starting concentration of the sediments/soils in the two projects. Table 4 on the following page summarizes capital, operating, and total costs for the minimum and maximum removal projects.

Table 4. Cost Summary for Minimum and Maximum Removal Projects		
	Minimum Removal Project	**Maximum Removal Project**
Removal Volumes		
Coarse-grained Sediment (SED A)	200,401 cy	879,601 cy
Fine-grained Sediment (Sed B)	0 cy	1,822,608 cy
Floodplain Soils (SO A)	20,641 cy	682,809 cy
Total	**221,042 cy**	**3,385,018 cy**
One Treatment Cycle 50 mg/kg Treatment Goal (see March 13, 2008 Report)	**20 cy/hr Plant)**	**40 cy/hr Plant**
Capital Costs	$9,718,625	$12,610,309
Operating Costs	$27,814,480	$336,369,206
Total Costs	**$37,533,105**	**$348,979,515**
Average Operating Cost/cy	$125.83 /cy	$99.37 /cy
Average Total Cost/cy	**$169.80 /cy**	**$103.10 /cy**
Multiple Treatment Cycles 2 mg/kg Treatment Goal (this Supplement Report)	**5 Cycles**	**3 Cycles**
Capital Costs	$26,608,225	$23,778,760
Operating Costs	$44,987,314	$489,154,711
Total Costs	**$71,595,539**	**$512,933,471**
Average Operating Cost/cy	$203.52 /cy	$144.51 /cy
Average Total Cost/cy	**$323.90 /cy**	**$151.53 /cy**

Table 4 shows that the unit costs for the maximum project would increase from $103.10/cy for 1 treatment cycle to $151.53/cy for 3 treatment cycles. The unit cost for the minimum project would increase from $169.80/cy for 1 treatment cycle to $323.90/cy for 5 treatment cycles. *These costs include a conservative 25% contingency allowance.* As stated previously, the total Site Remediation costs include Removal, Treatment, Transportation & Disposal, and Site Restoration. Using treatment to meet the reuse criteria, treatment costs would be increased, but the Transportation & Disposal costs would be eliminated, and Site Restoration costs would be substantially reduced. All of these factors combined, treatment to meet the reuse criteria would result in significant savings in the overall Site Remediation costs.

COMMENTS ON GE'S RESPONSE TO EPA'S COMMENTS ON THE
REVISED GENERAL ELECTRIC COMPANY CMS PROPOSAL
FOR THE HOUSATONIC 'REST OF RIVER' CLEANUP
By Citizens for PCB Removal May 11, 2009

The document submitted by General Electric on March 6, 2009 for its second and revised proposal for the cleanup of the 'Rest of River' is somewhat 'gentler' and more conciliatory in tone. It initially gives the impression that GE is concerned about the structure, beauty and intrinsic value of the River as a living environment and sacred delicate entity. It is encouraging that perhaps Company personnel recognize what a shame and disaster it would be to completely dredge, cap and enarmor the banks and sediments of the Rest of River in an identical continuance of what has been done in the River to date, in Pittsfield, through Fred Garner Park.

However, this "concern" should not be the impetus for a "do nothing" approach. The Environmental and Human Risk Assessment Studies conducted by the EPA should and still do mandate that this River is very "sick"; contaminated, contagious, and extremely dangerous to Life in all forms, and therefore must be cleaned up to current minimum Environmental Standards, or better.

We reject a "wait and see" or a "do nothing" approach, and we reject the "slash and burn" (dredge, cap and landfill) approach of the recent past. Something New and Innovative must be done for Rest of River. **We reject this latest GE proposal.**

Therefore, it is CPR's stance, as it always has been, that Removal of PCB's from the River, its sediments, banks and flood plains, as well as in the greater surrounding communities is paramount, prudent, and mandatory. While members of CPR signed onto and endorsed the application for the ACEC designation for the River, as a way to protect and preserve the integrity of its natural beauty and species diversity, *in no way* should this be misinterpreted that CPR is not supporting the most thorough cleanup that can be done, in the most environmentally sensitive and responsible way possible.

Thus, we reiterate the stance we have taken from the very beginning of our existence. CPR advocates and entreats the EPA to require GE to design and submit a plan that:

1. Removes the most PCB and other contamination from the River, sediments, banks, flood plains and surrounding communities as is humanly possible in order to protect environmental and human health. This should be done to AT LEAST the current minimum standards, and, if possible, to even lower levels of detection, if the technology can be found and implemented.
2. Involves little to no transportation of contaminants and contaminated sediments, soils and other materials to another location for landfilling. We consider landfills to be dangerous, foolish, temporary at best, and highly unethical and immoral. Whether trucked to distant communities or dumped somewhere in the midst of our own, this is NOT the solution but just a very expensive and foolhardy game of "sweep it under the rug" (literally!) and we cannot support or endorse this as part of a long term solution. We oppose the trucking of our problems to other communities in other parts of the state or country, we oppose any addition to Hills 78 & 79 of any more material,, and we are vehemently opposed to the creation of any additional dumps in Pittsfield or anywhere along the river corridor communities in Massachusetts or Connecticut.
3. Involves the destruction of PCB's, preferably in situ, as a way to protect and preserve the integrity of the River environment to the utmost levels. We strongly urge the EPA to actively and aggressively seek out and require GE to test the most cutting edge, innovative methods for doing this that can be found on the planet. No stone should be left "unturned" in this quest, and cost should not be the deciding factor.
4. Puts the long term, multi-generational health of The River, its inhabitants, and its human neighbors first and foremost, and does not consider GE's Bottom Line as the highest concern.
5. Leaves us with a boatable, swimable, fishable, breathable, self-sustainable, LIVABLE river environment that is safe and healthy for ALL to enjoy for hundreds of years.

This is our chance to set an example for the country and the world. Terrible mistakes have been made in the past. Lets LEARN from those mistakes, hold those accountable for them accountable, and create something wonderful from this disaster that everyone – EPA, GE and all the Stakeholders - can be proud of for eons to come.

Charles P. Cianfarini Barbara E. Cianfarini Thelma Bazzotini Executive Committee, CPR

Review of
GE-Pittsfield/Housatonic River Site Rest of River (GECD850)
Response to EPA's Interim Comments on Corrective Measures Study Report

Prepared by Environmental Stewardship Concepts
On behalf of
Housatonic River Initiative

May 11, 2009

After reading GE's Response to Comments, ESC's general impression is that GE has concurred with all of the citizens' and EPA's concerns regarding the ecological devastation that will occur if the remedial actions listed under the Corrective Measures Study (CMS) were to go forward as presented in the 2008 CMS. GE does not, however, offer any new or revised alternative cleanup methods from those originally detailed in the CMS. GE seems to rely on the fact that there is no precedent for a cleanup of the Housatonic's Rest of River magnitude upon which to base their remedial strategy. For that reason, the company seems paralyzed in its ability to devise a cleanup alternative that removes PCBs and does not completely destroy the Rest of River habitat. Furthermore, GE believes that PCB remediation and complete ecosystem recover are mutually exclusive. Finally, GE has not addressed the need to remediate PCBs in the portion of the Housatonic River below Rising Pond. GE proposes to do nothing in the 100 miles of river in Connecticut.

Recommendations:

If GE cannot come up with its own alternatives based on criticism of the first options it released, it should solicit bids from the five (5) best companies and let each one do a pilot study on part of the site. Based on the results, GE should then use whichever method or combination of methods that proves to be the most ecologically sensitive, publically supported, cost-effective and efficient.

Document summary

GE's response to comments primarily consists of Responses to [EPA's] General Comments and Responses to [EPA's] Specific Comments. In response to outcry about the ecological devastation these alternatives would have, the gist of GE's response to general comments is to detail the ecological impact their plans would have on flora and fauna as well as the ecosystem as a whole, and then to list what percentage of the PSA would be impacted under what SED plan. For each SED plan, GE lists: function of the habitat, organisms and plants found in the habitat, effects of remedial alternatives and then constraints in restoration, restoration methods, and finally likelihood of success in restoration. It should be noted that the effects of remedial alternatives only refers to those they already created and does not incorporate any new plans that may have a less devastating impact. In general, GE's response to comments spends a great deal of time reiterating the concerns of the EPA and the public, but does not offer new alternatives.

The general themes from the document are:

- GE does not call for any changes to those already posed in the Corrective Measures Study Report. This applies to the original plans to do sediment removal. Their response simply analyzes the impacts that would occur under each SED plan.
- GE escapes addressing the concerns of the public, the Commonwealth, and EPA by stating that it does not matter how restoration occurs because the habitat will be so greatly altered that it will not ever be returned to the same conditions. This is another opportunity where GE should see that it needs to re-evaluate its old alternatives and begin studying new corrective measures.
- GE argues that there are no precedents set when it comes to cleanups like the one for the Rest of River. GE uses this excuse to imply its alternatives are the best available because they are the *only* ones available.
- GE states that the sediment and floodplain soil alternatives that require removal do not meet specific ARARs. Rather than find new alternatives, GE suggests waiving the ARARs.
- GE generally addresses the public's concerns about ecological damage by assessing the sediment removal plans individually and then listing what percentage of the Primary Study Area would be impacted under each SED plan.
- GE's approach to the release of PCB-contaminated sediment behind dams is maintenance of the Woods Pond and Rising Pond Dams so they do not fail.
- GE escapes commenting on alternatives because it says its ecologists have not had time to complete evaluations for potential impact avoidance, minimization, or mitigation actions for six example areas and that these evaluations are also dependent on further characterization of the removal alternatives for sediment and floodplain.
- GE has an ecologically sensitive alternative in the works but has not had sufficient time to develop it and thus it is not mentioned in this Response to Comments.
- In regards to an Upland Disposal Facility, GE is continuing to review potential locations, looking especially at locations beyond the 100 and 500 year floodplains, outside wetlands or areas constituting resource areas (under Massachusetts Wetlands Protection Act), and Priority Habitat or Estimated Habitat of species of concern (under Natural Heritage and Endangered Species Program).

Specific comments

GE repeatedly excuses itself from finding new alternatives by explaining that any form of remediation is going to be destructive and therefore, no new plans should be considered. This standpoint is applied to riverbank excavation and restoration (page 22); in regards to adverse impacts on rare species and habitats (page 38); and in regards to the citizens' concerns (page 182).

On page 37, GE states: *For the two principal dams in Massachusetts, Woods Pond and Rising Pond Dams, GE will ensure that those dams remain in place and do not fail. For the other three*

dams in Massachusetts, GE anticipates that, as long as those dams remain, the owners will continue their inspection and maintenance programs to prevent dam failure. For the dams on the Connecticut portion of the River, the existing FERC licenses for five of those dams run until May 2044 and the license for the remaining dam (Derby) runs until February 2026; and GE expects that these dam owners will likewise continue their inspection and maintenance programs to prevent dam failure.
It is nearly impossible to ensure that a dam does not fail. Engineered structures are not designed to last forever. It is not safe to assume that the dams will simply "remain in place and…not fail." GE is putting off an issue that is inevitably going to arise because dams fail and leases run out. Therefore, a revised corrective measures study must incorporate plans for the PCB-laden sediment behind the dams. The CMS must rely on the understanding that the dams could be removed or fail.

Page 55, GE discusses the integral role played by dead trees and branches ("woody debris") in the river's ecosystem. It states that restoring woody debris would be particularly difficult because the physical placement of the debris would disturb the sediment caps. This statement supports why sediment capping is not an optimal means of restoration by pointing out how the ecosystem will not be restored to resemble its natural characteristics. In addition, natural events can and will present the same type of physical threat to the integrity of the sediment caps.

Page 77, GE proposes a 5-year monitoring program after restoration (following sediment capping). Their comments mention only visual observation of stream itself as well as the riverbanks. Water chemistry testing is a classic means of determining the health of an ecosystem and inputs from point and nonpoint sources. Such a monitoring program would be considered incomplete and unreliable until the addition of sampling was incorporated. Recognizing that the decision for remediating the Housatonic will be reviewed every 5 years, the monitoring and maintenance activities must be planned as long as PCBs remain in the system at levels presenting risks to human health or the environment.

Page 88, GE admits that even using Best Management Practices, "there is no feasible way avoid or significantly minimize impacts" from combinations of excavation with capping or backfill, engineered capping without excavation, and thin-layer capping without excavation, which are slated to occur at six impoundments under various SED plans, affecting anywhere from 44% to 100% of the impoundment acreage.

Page 127, GE states: *We have found no precedent for the type of overall ecological restoration project that would be necessary under the more intrusive remedial alternatives – i.e., SED 3 through SED 8 and FP 3 through FP 7. Given (1) the extensive adverse impacts to the various habitats resulting from those alternatives, (2) the unique characteristics of the river/floodplain system in the PSA, and (3) the numerous above-discussed constraints on the restoration of the affected habitat types, individually and together, there is virtually no likelihood that, following implementation of any combination of those alternatives, the overall affected ecosystem of the PSA could be returned to its current condition and level of function.*

This comment justifies why GE needs to develop more alternatives. Though their current corrective measures may be the only ones available for a project like this, the public's concerns and EPA's concerns are sufficient to warrant greater effort in finding suitable alternatives.

Page 143, GE does not act according to the Precautionary Principle when it comes to disturbance from boat traffic, propeller wash, dropped anchors, and wake that could potentially disturb any layer of sediment capping through scouring or otherwise. To officially state that these events will be "localized and minimal in severity," GE must present data on the boat traffic, the laws regulating boat traffic and engine size, or new restrictions to protect sediment caps placed in the River.

On page 147, in GE's discussion of quality of life impacts, one very serious component left out when considering transportation to and from the site is the weight restrictions for that road. Very serious injuries and deaths have resulted in communities where weight restrictions were not abided by and truckers were unable to stop in time due to overloading. GE must set and maintain weight restrictions to prevent hazardous road conditions that may make local roads far more dangerous for residents.

On page 179, GE states: *"As can be seen by review of these tables, the sediment and floodplain soil alternatives that involve removal would not meet a number of the identified ARARs. Accordingly, a waiver of these ARARs and the others listed in the ARARs tables that could not be met would be necessary in order for the alternatives to be implemented."*
GE is remiss to think that the ARARs are suggestions, rather than state and federal laws that generally set standards of environmental quality, health, and safety. GE should take the ARARs into greater consideration during the development of new remediation and restoration measures. Waiving these ARARs is not an acceptable means for implementing the plan. The corrective measures should be developed according to specific criteria; you do not change the criteria to fit a plan, you develop plans that fit the criteria.

Page 184 states: *"GE does not agree with EPA's assertions that '[a] well-crafted and carefully implemented remediation and restoration strategy will allow the plant and animal communities to recover rapidly" and will "recreate fully functional ecological habitats and communities.'"*
This statement perfectly exemplifies why GE is paralyzed when it comes to presenting new alternatives. Ignoring comments from the EPA by simply disagreeing with them is not going to lead to a remediation strategy that fits all parties' agendas. GE should solicit an outside company that can offer their expertise and insight to change this cleanup into something that is acceptable by all parties involved.

Based on the figures presented in *Table gc13-5, IMPGs for human consumption of fish compared to projected fillet-based fish PCBs for all SED alternatives, including the time to achieve in years,* when taking the most conservative route for cancer risk (10E-6), at the probabilistic central tendency exposure (50^{th} percentile), it would still take 20 years at least before fish could be consumed. At an even more conservative number, it would take 37 years at least and as many as 79, before fish could be consumed. This is passing on the consequences

of GE's contamination problem to a whole new generation. These numbers are unacceptable. They were unacceptable in the CMS and are still unacceptable as a feasible cleanup goal.

Disclaimer

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Mention of any trade name or commercial product or company does not constitute endorsement by any individual or party that prepared or sponsored this report.

Housatonic Environmental Action League, Inc.

Post Office Box 21, Cornwall Bridge, CT 06754-0021 860-672-6867

May 11, 2009

Susan Svirsky, Rest of River Project Manager
US Environmental Protection Agency
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201
facsimile: 413-442-4447

Sent via email:svirsky.susan@epa.gov

RE: INFORMAL COMMENTS
"GENERAL ELECTRIC'S RESPONSE TO EPA'S INTERIM COMMENTS ON CORRECTIVE MEASURES STUDY REPORT"
SDMS #447141
MARCH 6, 2009

Dear Ms. Svirsky,
The Housatonic Environmental Action League, Inc. (HEAL) is a broad-based, non-profit, grassroots community organization advocating for a real clean-up of PCBs and other toxic substances from the Housatonic River watershed. Our members include, among others, sportsmen and women, conservationists, political leaders, health-care providers, watershed property owners, parents and concerned residents from the tri-state region.

We look forward to EPA allowing consistent fair and reasonable public comment period durations for the stream of endless esoteric documents at this site. The dance of one or more of the (all-volunteer and unpaid) grassroots stakeholder groups persistently having to request additional time is tedious and unnecessary.

HEAL endorses and supports the comments submitted by Dr. Peter deFur. The Housatonic River Initiative (HRI) is the sole citizen stakeholder organization recipient of this Superfund site's Technical Assistance Grant which is awarded by EPA. Dr. deFur is HRI's technical expert who reviews and comments on multiple of this site's documents and is compensated from proceeds of HRI's TAG. We strongly encourage EPA to consider and incorporate Dr. deFur's comments and recommendations for the enhancement of the CMS. We parallel his call for the implementation of the rational Precautionary Principle when making all decisions for Rest of River remedies.

GE's "response" to EPA's comments and questions on the original CMS is evasive and provides no new viable information on proposed containment, removal and treatment for Rest of River's extensive PCB contamination. GE's "ecologically sensitive alternative" is a euphemism for "doing even less than the original CMS", if that is possible.We grow weary of their attempts to avoid their responsibility and for an escalation in stalling tactics. Staying stuck on the SED 3 option will invariably leave unacceptable levels of PCBs that will continue to harm the biota, humans, resuspend for downriver transport and

volatilize for global transport. Like Dr. David Carpenter said at his April 29th presentation in Lenox, the disruption to the river and the watershed during mandatory and critical removal actions are temporary, but it is imperative to get the toxins out of the system because they will continue to do significant harm for generations. The science and technology of restoring ecosystems has become refined and perfected in the last two decades. We have only to view the 1.5 mile section of the river below the GE facility as proof that EPA is quite capable of a massive PCB-containment action combined with a conscientious and successful restoration project.

Not unlike EPA, the citizens want to know GE's proposal(s) for an Upland Disposal Facility (aka unlined toxic waste dump a la Hill 78). HEAL opposes yet another unlined toxic dump anywhere in the Housatonic watershed. If contaminated sediment needs to be temporarily staged in anticipation of on-site PCB destruction technology, a bottom liner should be mandatory.

HEAL supported the MA ACEC designation in principal, but not at the expense of a complete removal action that utilizes Best Available Technologies (BAT) that also defines and implements Best Environmental Practices (BEP) requirements. The Housatonic River site deserves interdisciplinary pilot studies that reaches out to numerous different alternative destruction technologies.

GE persists in ignoring over 100 miles of contaminated riverine system below Rising Pond Dam and for the entire section of river in Connecticut. GE continues to claim that their toxins behind every dam site in MA and CT will stay put inperpetuity.

According to the EPA web site: "The mission of the Environmental Protection Agency is to protect human health and the environment." In the presence of two of the most extraordinary (and damning) peer reviewed risk assessments for ecological and human health ever conducted in the US, the time has come at this site for EPA to honor their obligation to protect the watershed and all of its inhabitants. EPA needs to call a halt to GE's corporate polluting dog and pony show. We urge a rejection of GE's vacant responses to EPA's interim comments on the CMS. We look forward to advancing the dialogue at the Citizens' Coordinating Council meetings to investigate what options are available to EPA to take total control over the site and charge GE accordingly.

HEAL, along with many of the other stakeholder groups involved at this site, take seriously our combined mission for a swimmable and fishable river within our grandchildren's liftime.

Sincerely,

Judith Herkimer

Attached:

April 4, 2009

Jim Murphy
EPA Community Involvement Coordinator
c/o Weston Solutions
10 Lyman Street,
Pittsfield, MA 01201

RE: HRC Comments on General Electric's response to the Environmental Protection Agency's Comments on GE's Corrective Measures Study (CMS)

Dear Mr. Murphy:

The Housatonic River Commission was formed in 1978 by the Connecticut towns of Canaan, Cornwall, Kent, New Milford, North Canaan, Salisbury and Sharon to advise the towns on issues pertaining to the Housatonic River. As long-time participants in the Citizen's Coordinating Council, we have increased our awareness of the extent of the problems associated with General Electric's property in Pittsfield where PCBs were allowed to pollute not only GE's property but the Housatonic River.

The EPA's Human Health Risk Assessment and Environmental Risk Assessment confirm the damage associated with exposure to PCBs. Removing the PCBs from the environment is of utmost importance. We support the EPA in wanting to ensure that GE's "clean-up" work on the Housatonic River will protect the public health and the health of the River's ecosystem. The remedies proposed by GE are not sufficient to ensure this.

The clean up proposed by GE will take a long time to implement under any of the alternative scenarios. GE's estimates of ten years to implement SED 3 and fifty-one years to implement SED 8 are reasons enough to ask for a phased approach to remediation. Each phase of two to five years should include pilot projects to test new technologies. The stakeholders need some assurance that new technologies will be tried rather than just reliance on older, slower methods.

In Connecticut, the recommendation is for Monitored Natural Recovery (MNR) which boils down to "wait and see". But, what if MNR fails? What if there is no long-term improvement in the PCB levels in sediment and fish? The CMS should include provisions for a direct clean up if no significant improvements in PCB levels are noted in the next five to ten years.

The newly designated Area of Critical Environmental Concern shouldn't be used as a distraction by those who are not well informed about the health effects of PCBs and the extent of their pollution to the river and floodplain. We are looking for remedies that go beyond short term comfort to the commitment to future generations.

We are not suggesting that GE and the EPA throw out this CMS and start over, but we would like to see some eco-imagination at work - especially regarding new technologies and a more realistic timeline.

Sincerely,

William Tingley, Chairman
Housatonic River Commission

cc: file, HRC

Jim Murphy
EPA Community Involvement Coordinator -Weston Solutions
10 Lyman Street Pittsfield, MA 01201

May 11, 2009

Thanks to EPA for allowing an informal comment period on GE's response to EPA Comments on the Corrective Measures Study. This letter is to reinforce some thoughts on "rest of river". Dr. Peter DeFur will also provide comments on behalf of HRI and other stakeholder input.

Upon reviewing the Response to EPA's Interim Comments by the General Electric Company we find few real changes from the original Corrective Measures Study. Instead GE seems to be defending their position for SED 3 and priming the public for a new" Ecologically Sensitive Approach" which will no doubt serve to minimize the PCB clean up which only benefits the company. Being that most clean up alternatives discussed in the Corrective Measures Study never achieve HRI's goal of a fishable, swimmable river this new approach will undoubtedly also leave unacceptable levels of PCBs in the river and floodplain. There must be an attempt to achieve the goals of the Clean Water Act.

Throughout their responses GE tries to make the case that most of the clean up scenarios will bring ecological devastation to the river. After participation in both the Ecological and Human Health Risk Assessments and studying the data that has been generated in "Rest of River" we believe that nothing trumps the ecological devastation of GE's PCBs. This devastation started in the 1930's and has made the Housatonic River a toxic legacy for generation after generation. The two risk assessments have been characterized as two of the most damming documents for PCBs in a river

system.

General Electric borders on saying that restoration is an impossible task. .Several times the Citizen Coordination Committee have seen presentations that show the evolving field of restoration and case studies where restoration has been successful in ecologically sensitive areas with similar challenges that might be encountered in “Rest of River”. We urge the EPA to require GE to be financially responsible for the best restoration techniques available. We also urge the EPA to involve interested stakeholders in restoration planning and reviews throughout out the clean up process.

General Electric continues to not reveal where their preferred location is for another PCB dump. Citizens of Berkshire County have been vocal that another GE dump is unacceptable. Technologies exist to minimize both PCB levels and volume. Use of the Best Available Technology should be the goal. Any land fill area needed to achieve clean up goals should be legally designated a temporary solution with a timeline and plan to clean it up. It should never be permanent.

General Electric should be made to surgically remediate at all dam sites where PCBs have accumulated. Instead GE proposes to monitor dam sites for integrity instead of any PCB reduction.

We urge the EPA to reject an environmental sensitive solution that allows levels of PCBs that are not protective of human health and the ecological receptors in the river ecosystem.

Recently the Primary Study Area was designated an Area of Critical Environmental Concern (ACEC) by the State of Massachusetts. This designation should both increase the importance of achieving the best possible remediation of PCBs and state of the art

restoration techniques.

Sincerely,

Timothy Gray for the

Housatonic River Initiative

Housatonic Valley Association

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Jim Murphy
US Environmental Protection Agency, New England – Region 1
Office of the Regional Administrator
1 Congress St., Suite 1100
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Dear Mr. Murphy,

Representing the Housatonic Valley Association, I would like to thank you for the opportunity to comment on GE's 'Response to EPA's Interim Comments on Corrective Measures Study Report'. Our overall feelings about GE's response report is that it is severely lacking in any constructive, meaningful remediation that will effectively rectify the damages that have incurred to the Housatonic River by the dumping of PCB's into the river.

It appears that GE's perspective is to conduct the minimum amount of remediation. They may feel that the Housatonic Watershed community does not favor a remediation plan that will temporarily disrupt the present river environment. While that may be the feeling of some, we feel strongly that it is not the feeling of the majority. We want GE to conduct a thorough, comprehensive remediation that will remove the PCB to a level that will provide the watershed community a clean safe river that will allow people to once again go fishing and swimming in the Housatonic River.

To reach this goal, we realize that the present setting of the river environment will have to be drastically altered. The contaminated soil in and around the river will have to be removed and replaced with clean material similar to what was once there before the PCB contamination. We recognize that it is extremely unfortunate that we will have this drastic interference, but we feel strongly that in the long term perspective, the river, and the community should have the PCBs removed. We feel that with a proper comprehensive operations plan, this river can be cleaned and re-created to the pristine setting that it once was.

Therefore, we want to see a true remediation plan that will allow our communities to utilize the river as a major cultural, historic and recreational resource that can be enjoyed for generations to come. We want to see a comprehensive remediation plan that employs effective up-to-date technology along the river and the removal of any sediment from the rivers' edge.

Sincerely,

Dennis Regan
Berkshire Program Director

Mass Audubon
Protecting the Nature of Massachusetts

May 8, 2009

Jim Murphy
EPA Community Involvement Coordinator
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Dear Mr. Murphy:

Thank you for the opportunity to provide comments on the March 2009 submittal by General Electric (GE) "Response to EPA's Interim Comments on CMS Report – Housatonic River – Rest of River." Our comments here reiterate several of the points we have made previously, and highlight areas where GE's response to comment documents are inadequate, erroneous, or unresponsive to key comments or suggestions from Mass Audubon, EPA, MassWildlife, or others. Despite the submittal of a lengthy Corrective Measure Study (CMS) and response to comments, we believe that we still do not have adequate information to assess the proposed alternatives or the feasibility and cost of restoration of remediated areas.

We have identified several areas where the responses to comments should be revised, and provide related comments concerning the "ecologically sensitive alternative." In particular, to the extent full restoration of natural communities and populations of native species, or compliance with ARARs, is not possible, all of the alternatives proposed must be designed to achieve these goals to the maximum extent feasible.

Mass Audubon's Interests in the Cleanup

As we noted in our May 20, 2008 comment letter on GE's CMS, Mass Audubon has a direct and substantial interest in the proposed cleanup both as one of the largest affected landowners within the Primary Study Area and as a conservation organization whose mission is protecting the nature of Massachusetts for people and for wildlife. Mass Audubon owns and operates the 262-acre Canoe Meadows Wildlife Sanctuary, located in the City of Pittsfield within reach 5A, approximately one mile downstream from the confluence of the East and West branches of the Housatonic River. Mass Audubon's property is located primarily to the south of the Holmes Road Bridge, although a small portion of the sanctuary is located north of the bridge along the River. Canoe Meadows contains approximately 3,000 linear feet of frontage on the Housatonic River and includes approximately 2.6

acres of land under the Housatonic River. Much of the Sanctuary is in the river's floodplain, and is contaminated with PCBs as a result of GE's past activities at its Pittsfield facility.

ACEC Reinforces Support for Remediation

As we commented previously, Mass Audubon strongly supports the remediation of the Housatonic River to reduce the human health and ecological risks associated with PCB contamination. As has been noted by many in this process to date, the Housatonic River is a highly significant resource for wildlife habitat and recreation. GE must be held to the highest standards in remediating the contamination in the River, its banks, and floodplain. This position is reinforced by the Commonwealth's recent designation of the Upper Housatonic as an Area of Critical Environmental Concern (ACEC), for which there was strong public support. In his March 30, 2009 letter designating the ACEC, State Secretary of Energy and Environmental Affairs Ian Bowles states specifically that the designation is intended "to promote [PCB] remediation while avoiding and minimizing adverse environmental impacts," and to "encourage mitigation and restoration of critical resources…." The presence of high concentrations of toxic, persistent, and bioaccumulative compounds in an otherwise superior ecological setting such as the Upper Housatonic is a problem that must be addressed with an extraordinary level of thoughtfulness and creativity, and in a manner which fully engages stakeholders. In our opinion, in the information submitted to date, GE has failed to adequately describe any remediation and restoration scenario that achieves the goal of substantially reducing PCB-related risks in a timely manner while ensuring the protection or restoration of the significant ecological attributes of the area.

GE's Supplemental Submittal Lacks Key Information

The recent submittal by GE contains a great deal of material in response to the comments raised by EPA on the CMS. In that document, GE repeatedly emphasizes the environmental significance and sensitivity of the resources associated with the Upper Housatonic, while stating emphatically that it now believes that the alternatives that were evaluated in the CMS would not sufficiently protect these resources. In this latest submittal, GE offers a new "ecologically sensitive alternative" that purports to better protect the resources of the River. However, in more than 1,300 pages of text and related material, GE provides very little detail regarding remediation methods to be employed in the ecologically sensitive alternative.

To the degree that it is described, Mass Audubon agrees that GE's development of the "ecologically sensitive alternative" is, conceptually, an improvement over the alternatives analyzed in the CMS report. However, without more information it is impossible to know whether or not the criteria GE lists as guiding the development of the "ecologically sensitive alternative" will give rise to an alternative that adequately reduces PCB-related human health and ecological risks.

We believe that GE is on the right track in proposing a much more site-specific analysis of remediation alternatives that takes into consideration factors such as the concentration of PCBs present in sediment or soil, and the avoidance of areas with a high density of faunal and floral species of concern. Neither PCBs nor rare species and their habitats are distributed uniformly throughout the floodplain

(though GE emphasizes that, with 28 state-listed species occurring in the study area, places that are not habitat for at least one rare species are few). In areas where species of concern and concentrations of PCBs co-occur, difficult choices will need to be made about the appropriate level of remediation, taking into consideration the overall goal of meeting target goals for human health and ecological risks, the measures available to reduce or mitigate the impact on a particular species, and the impact to the local population of the species, and its broader distribution in the Commonwealth. The ecologically sensitive alternative should not only describe measures to physically minimize habitat destruction and fragmentation, but should also provide detailed plans for restoration of each habitat type. It should include methods such as capture and release of rare species, propagation of rare plants, and relocation of appropriate plants and animals to remediated areas.

GE promises much in its "ecologically sensitive alternative," but it is hard to see how <u>any</u> alternative could be designed that will avoid the types of impacts that have been identified, including the take of rare species, and still provide a meaningful remediation of PCB contamination along the River. We are concerned that GE is trying to put EPA, landowners and the community in the position of accepting only one "viable" alternative – the yet to be described "ecologically sensitive alternative." As an alternative, we recommend that EPA instruct GE to present a reworking of all of the alternatives in the Supplemental CMS through the filter of ecological sensitivity, so as to provide a fair basis for comparison with the new "ecologically sensitive alternative." For example, areas containing high numbers of rare species and high concentrations of PCBs deserve particularly detailed analysis and creative planning. To meet the remediation targets prescribed in the various sediment and floodplain alternatives while protecting populations of rare species, rare plants and animals may need to be gathered and relocated to other areas. Critical habitat features such as overhanging vertical banks should be preserved and innovative methods explored to maintain or restore the natural functions of the riverbank. These and other ecologically sensitive techniques should be woven into all of the CMS alternatives, not just GE's conceptual "ecologically sensitive alternative."

Additionally, GE could present critical information in a way that would help clarify some of these issues. For example, it would be very helpful to have maps that show PCB concentrations overlaid on rare species concentrations. To what extent do these "hot spots" coincide? To what extent are they different? Such maps would better enable reviewers to evaluate GE's claims regarding the effects of the remediation alternatives on rare species habitats. It would also be helpful to have a better understanding of the impacts on local populations of rare species. For example, to what extent do these local populations extend outside of the Primary Study Area? Are there other locations in the Commonwealth where these species are found?

<u>Role of Woods Pond</u>

In developing the ecologically sensitive alternative, we recommend that EPA instruct GE to evaluate the possibility of dredging portions of Woods Pond. The following factors and others should be evaluated:

- Effectiveness of thin layer capping is questionable. Given the dynamic nature of river systems, it appears likely that a thin layer cap would be eroded during flood events and disturbed by plant roots, animals burrowing in the sediment, and recreational users;
- Aquatic habitat loss and conversion from one habitat type to another;
- Maintenance of the role of the pond as a trap for PCBs that otherwise will migrate downstream during and after remediation;
- Existing shallow conditions and siltation in the pond, indicating if it is not dredged it will become a vegetated marsh/swamp. The timeframe for these changes should be evaluated as well as the effect on PCB movement through the pond and across the dam; and
- Maintenance of the recreational values of the pond.

GE's Discussion of Restoration is Inadequate

In our May 2008 comments on the CMS, Mass Audubon noted the inadequacy of the information presented in the CMS regarding restoration, and requested that significant attention be paid to this issue in the Supplemental CMS. In our letter we stated:

> Given the sensitivity of the habitat along the Housatonic River and its floodplain, GE must be held to extraordinarily high standards for this clean up, which should begin with avoidance and minimization of adverse impacts to critical habitats. Where there is no alternative but to destroy habitats, restoration of affected areas to fully functional habitats must be required by EPA. Further information and analysis of restoration options through a Supplemental CMS is needed prior to identification of a recommended clean up alternative by EPA.

GE has not adequately addressed this comment and the request by EPA and other stakeholders to provide information on this issue. We note that GE has not yet provided information in response to Comment #42 in "EPA's Comments on GE's March 2008 Corrective Measures Study Report." We understand that six specific areas within the Primary Study Area have been identified for detailed restoration planning by GE, including one site at Canoe Meadows Wildlife Sanctuary. It is important that this information be developed and made available for review by landowners and the public so that we can better understand the impacts of various alternatives and the approach to restoration that will be taken in a variety of habitat types. Ideally, this information will be made available well in advance of the release of the Supplemental CMS.

While GE notes in its submittal that there is no precedent for a cleanup of this magnitude in habitats with equivalent environmental significance, it is unacceptable for GE to dismiss the possibility of true habitat restoration. Over the past decades and throughout the United States, many wetlands have been replicated or created at sites where no wetland habitat features previously existed. While the scale and complexity of the Housatonic restoration is more extensive than the typical restoration, practices applied at smaller scales can be utilized, in a repeated, phased manner, across this larger restoration project. Also, where ecological restoration and monitoring is needed, it is clear that this

monitoring will need to occur over a period much longer than the 5 years suggested by GE. EPA should require GE to commit to long-term monitoring until restoration goals are achieved.

Another example of the inadequacy of GE's discussion of restoration in its submittal is GE's treatment of vernal pools. GE correctly describes vernal pools as critical elements of the Housatonic floodplain, supporting characteristic assemblages of obligate and facultative species. We agree with GE's assessment that the potential effects of soil removal and replacement, tree cutting, access road construction and use, and other remediation activities on vernal pools could be significant to the continued presence of vernal pool-related species in the area. However, while recognizing the important ecological roles played by vernal pools and their constituents, GE overstates the complexity of vernal pool restoration/creation, and the magnitude of the effects of remediation on functional vernal pools.

In many instances in Massachusetts, accidentally-created depressions function as vernal pools within several years of their establishment, if by chance their characteristics are suitable. As this is the case, the deliberate design and construction or reconstruction of vernal pool habitat can be successful in the Northeast (see, for instance, Biebighauser, 2003[1], for examples and techniques). GE properly identifies many of the physical characteristics of vernal pools, which could be used as guidelines for habitat restoration. It may be years or decades before reconstructed pools achieve a semblance of their present conditions. As we noted in our previous comments, a more detailed "pool by pool" examination of vernal pools needs to be conducted to weigh the costs and benefits of remediation of these areas. While avoidance may be the preferred strategy in some cases (particularly those that require construction of lengthy access roads), in others remediation may be the best means to ensure the long-term health of vernal pool communities.

GE properly notes that the environment of the remediation area is a dynamic one, influenced by riverine processes that alter the landscape and associated habitats over time. Along rivers such as the Housatonic, these alterations can be either gradual or catastrophic. This in itself points to the adaptive nature of many floodplain and riverine species. GE's response to comments states that many affected species have high site fidelities, and it claims that, therefore, restoration of habitat for these species will not be successful because the local individuals will be destroyed or driven away during remediation. Nevertheless, plants and animals do move around and recolonize habitats within floodplain communities. If this were further facilitated by capture and release of animals, propagation of plants, and perhaps even "seeding" of vernal pools and other areas through placement of appropriate, biologically-rich water and sediment, restoration could be enhanced and accelerated. The Supplemental CMS should contain an in-depth discussion of the potential of these and other restoration techniques to restore specific communities and habitats, rather than dismissing the possibility of restoration outright.

[1] Biebighauser, Thomas R., 2003. A guide to creating vernal ponds. USDA Forest Service, Morehead, KY.

ARARs and MESA Analysis

GE's submittal makes numerous references to the infeasibility of meeting state environmental regulatory requirements, such as the performance standards under the Massachusetts Wetland Protection Act or the provision of Net Benefit to state-listed rare species under the Massachusetts Endangered Species Act. This response is fundamentally flawed. The question is not whether or not the cleanup can comply with all otherwise Applicable and Relevant or Appropriate Requirements (ARARs) of state laws. GE should present alternatives that comply with these requirements to the maximum extent feasible. Examples include minimizing the footprint and fragmentation effects of remediation; phasing work and relocating plants and animals from undisturbed areas to restored areas; more detailed plans for restoration of soils, elevations, microtopography, and plants; invasive species management programs; and potential retention of selected locations of exceptionally important habitat features that are particularly difficult to restore (e.g. vertical eroding banks, especially if there are some locations where the PCB concentration is relatively lower because these eroding banks are only subjected to contamination during infrequent flooding events).

Numerous Issues Remain

In our May 2008 comment letter, we expressed a number of concerns which have not yet been addressed in this process to date. These include:

- The impact of armoring or otherwise stabilizing banks along Reach 5A/5B in a manner that will eliminate the functionality of these banks and the need for alternative approaches that retain and/or restore bank functionality along portions of the shoreline.
- The need for a phased remediation that allows for adaptive management -- with flexibility to adjust remediation and restoration methods over time based on experience and evolving techniques. We continue to believe that GE and EPA should give consideration to permitting a "demonstration phase" of the remediation south of the confluence which would employ state of the art restoration techniques and provide time for evaluation of the results before proceeding with the remainder of the remediation.
- GE should compensate affected landowners for the short and long-term harm to public recreational use of lands and waters that will be affected by the remediation as well as for any long term resource damage that will result. In addition, we expect GE to provide compensation for the significant direct costs incurred by Mass Audubon for staff and consultant review and oversight of this project.

We Request a More Formal Role in this Process

As a significant landowner along the River, Mass Audubon requests the opportunity to participate in a meaningful way in the development of remediation alternatives. We would like an opportunity to review the proposed "ecologically sensitive alternative" – ideally in consultation with EPA and other large landowners like the Massachusetts Department of Fish and Game – before this information is presented in the Supplemental CMS with a short period for review and comment. We look forward to reviewing the information on restoration design that will be produced in response to EPA's Comment 42, to enable us to better understand the level of detail and decision-making process for the design and implementation of post-remediation habitat restoration. We also request the opportunity to participate in the development of performance standards, particularly as they will affect Mass Audubon's Canoe Meadows Wildlife Sanctuary. We have significant staff expertise and are devoting significant resources to the review of the proposed remediation.

Thank you again for the opportunity to comment on GE's "Response to Comments." We appreciate EPA's efforts to hold GE to the highest possible standards for remediation and restoration and look forward to working with you throughout this process.

Sincerely,

Laura Johnson
President

cc: EPA Regional Administrator
Susan Svirsky, EPA
Jeff Porter, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (for General Electric)
Kevin Mooney, Remediation Project Manager, General Electric
Ian Bowles, Secretary, Executive Office of Energy and Environmental Affairs
Mary Griffin, Commissioner, Massachusetts Department of Fish and Game
Laurie Burt, Commissioner, Department of Environmental Protection
Wayne F. MacCallum, Director, Massachusetts Division of Fisheries and Wildlife
Susan Steenstrup, DEP WERO
Congressman John Olver
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Representative Christopher Speranzo
Representative Denis E. Guyer

Representative William Smitty Pignatelli
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Housatonic Valley Association
Housatonic River Initiative
Berkshire Environmental Action Team
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May 11, 2009

Susan Svirsky
EPA Rest of River Project Manager
Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Dear Ms. Svirsky:

Thank you for the opportunity to comment on General Electric's (GE) Response to the U.S. Environmental Protection Agency's (EPA) Interim Comments on Corrective Measures Study (CMS) Report, Housatonic River-Rest of River (ROR), March 2009. The U.S. Fish and Wildlife Service (FWS) is providing comments during the informal public comment period under our role as Natural Resource Trustee.

FWS provided comments in May 2008 on GE's CMS Report. We did not concur with the findings of GE, relative to their selection of sediment and floodplain remedial alternatives SED 3 and FP 3, respectively. We do not agree that those remedial alternatives comprehensively address the totality of risks associated with the widespread PCB contamination in the river and its associated floodplain. Furthermore, we believe that more extensive and intensive remedial and restoration efforts, in the ROR, especially the Primary Study Area (PSA), are necessary for reclamation of the river and its floodplain from decades of accumulated contamination that impacts human health and the environment. In contrast to GE's position, FWS does not believe that increased remedial actions will necessarily result in permanent adverse ecological effects or irreparable harm. Large-scale remedial and long-term restoration actions have the potential to successfully attain Interim Media Protection Goals (IMPGs) and ensure robust restoration of habitat to conditions comparable to or better than pre-remedial conditions. We recognize the inherent wildlife value of the diverse and ecologically important habitats present in the ROR. We also understand that substantial areas of habitat will be lost in the near-term so that long-term health of the ecosystem can be re-established.

We look forward to GE's presentation of an Ecologically Sensitive Alternative (ESA) that is discussed in brief throughout their responses to EPA's comments. The ESA will be compared with previously presented remedial options and attempt to balance attainment of IMPGs with preservation of ecologically sensitive habitat areas. We caution that the ESA should not be overly conservative in its attempts to avoid impacts that might otherwise be mitigated for or restored over time. The use of

the ESA approach as a tool to disallow remedial actions that are warranted in substantial sections of the PSA is not acceptable unless the loss of significant, unique and irreplaceable habitat is at stake.

General comments:

Further evaluation of riverbank stabilization and its ecological implications needs to be conducted in a detailed biogeomorphic framework. Quantitative analysis of riverine/floodplain design should be provided to allow more in-depth evaluation of potential implications of remediation and restoration options on the long-term stability and health of the ecosystem.

Literature-based documentation should be provided for statements on irreversible harm to species based on temporal or spatial loss of habitat. Restoration of habitat areas and species recovery should be evaluated based on short-term and long-term time scales. It would be beneficial to construct chronological habitat maps of proposed remedial and restoration actions throughout the PSA. This would allow for the evaluation of developing habitat quality and quantity via restoration efforts/succession and how the restored habitat would be interspersed/juxtaposed within the larger landscape. This information could then be used to project how suitable habitat quality requirements for specific species and species assemblages would evolve over time. Some of these issues are discussed in GE's response to EPA comment 10 and Appendix B – Assessment of MESA issues for rare species under Remedial Alternatives. However, restoration benefits are discounted or under-represented in these sections and need to be more broadly accepted and integrated as viable mechanisms for re-establishment of habitat types and species distributions.

Expeditious re-vegetation of remediated areas is key to the re-initiation of biotic community dynamics and succession, abiotic habitat stabilization, and avoidance of invasive species establishment. The establishment of desirable species and competition with invasive species, in conjunction with long-term invasive species control, is integral to habitat re-vitalization.

FWS believes that management of PCB-contaminated sediment behind existing dams should be addressed in the near-term rather than over the long-term or after an acute release event. It is unrealistic to propose that all dams downriver of the PSA with substantial PCB-contaminated sediment loads will be maintained in perpetuity. Furthermore, it is uncertain if GE will be a viable entity in perpetuity to deal with future issues related to PCB-contaminated sediment transfer from these dams. Therefore, it is important to address the potential PCB mass load transfer and in-place contaminant issues now, while remedial actions are being proposed and funding is available.

We support the use of activated carbon (AC) and reactive activated carbon (RAC) in circumstances where it will benefit capping and sequestration. However, we do not support the use of thin-layer capping (TLC) in conjunction with AC or RAC or in lieu of sediment removal in erosion-prone areas.

We believe that potential risks, associated with PCB contamination of vernal pool habitats throughout the PSA, warrant remedial actions to meet IMPGs. Similar remediation and restoration of vernal pool habitat was successfully conducted in Phase IV in the 1½-mile Remedial Phase. Furthermore, successful vernal pool or amphibian breeding habitat creation or replication has been

successfully implemented in other areas of the Northeast. Therefore, remediation/restoration of vernal pool habitat in the PSA is seen as a viable option with high potential for success.

FWS anticipates that the in-depth analysis of the six PSA indicator areas, selected by EPA and the states (October 30, 2008 letter from EPA to GE), will allow GE to provide detailed descriptions of remediation and restoration actions for a variety of habitat types and species occurrences. This will provide further agency opportunity to weigh GE's proposed methods to insure adequate ecological protection from contamination, implement innovative remedial/restoration measures, and avoid, minimize or mitigate impacts to sensitive habitats.

We advocate much longer monitoring than the proposed five-year post-remediation/restoration time period. Restoration plantings, habitat development and invasive species issues will require long-term monitoring consistent with community maturation timeframes.

GE presented 2008 PSA largemouth bass tissue data that showed significantly reduced tissue concentrations from previous sampling events. It would be beneficial to know if the reductions in fish tissue concentrations are in agreement with fish tissue modeling predictions, based on completed upstream source area remediation. Fish tissue PCB concentration reductions in excess of model predictions may necessitate re-calibration of fish tissue models. This may also influence future timelines for remedial alternatives to attain acceptable human health fish tissue consumption concentrations and IMPGs for piscivorous indicator species.

We support the application of IMPGs within the boundaries of the PSA and ROR. We acknowledge that this will result in short-moderate term impacts to species due to habitat acreage reductions. However, it may also displace some affected species to adjacent uncontaminated or unremediated habitats that satisfy home range requirements during remedial actions. We also expect temporary shifts in species assemblages and promotion of early successional species as restored habitat matures.

It is apparent from GE's Response to Comments on the CMS and Ecological Risk Assessment (ERA) that GE and EPA have fundamental differences of opinion on the level of ecological risk associated with PCB concentrations in abiotic and biotic media in the ROR, and the necessity or level of remedial action required. We generally support the findings of the site-specific studies and literature used in the ERA, as well as the IMPGs proposed. We believe attainment of the IMPGs will promote long-term protection for the host of species residing in and utilizing the PSA and downriver areas. We also believe that integrated remediation, avoidance, minimization, mitigation and restoration can provide a workable format for the restructuring of the river corridor and its return to a fully functional, healthier ecosystem over time.

We look forward to the submittal of the ESA, the in-depth indicator area analysis, and continued productive discussions on the Corrective Measures Study. Please contact Kenneth Munney at 603-

223-2541, extension 19, or Kenneth_Munney@fws.gov if you have questions or concerns about these comments.

Sincerely yours,

Eric L. Derleth

Eric L. Derleth
Acting Supervisor
New England Field Office